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(54) **Ignition coil.**

(57) The coil comprises an insulating casing (1), in which a primary winding (4) and a secondary winding (3) are housed, and a connection arrangement (9, 16) which enables an output lead (15) to be positioned and retained in any desired angular position for connection to a spark plug.

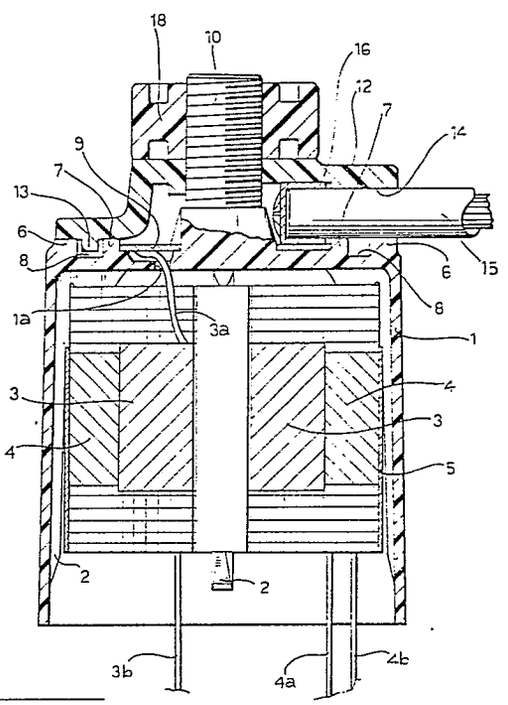


FIG. 2

EP 0 321 416 A1

Description

Ignition coil

The present invention relates to an ignition coil, and more specifically to a coil for static-distribution ignition systems for motor vehicles, of the type comprising:
a casing of electrically insulating material in which a primary winding and a secondary winding are housed, and
connection means for enabling the electrical connection of one end of the secondary winding to a high-tension lead for connection to a plug.

The ignition coil according to the invention is characterised in that the connection means comprise:
an annular electrical terminal situated around an appendage of the casing and connected to the end of the secondary winding,
an electrically insulating cover element mounted for rotation about the appendage of the casing on the annular terminal and carrying a contact member to which one end of the high-tension lead is connected or connectible, the contact member being slidable on the annular terminal due to the rotation of the cover element relative to the casing of the coil, and clamping means for enabling the cover element to be position and retained in any desired angular position relative to the casing.

By virtue of these characteristics, the high-tension lead which represents the outlet of the ignition coil can be oriented in any desired position with obvious advantages in its mounting.

Further characteristics and advantages of the invention will become clear from the detailed description which follows with reference to the appended drawings, provided by way of non-limiting example, in which:

Figure 1 is a front elevational view of a coil according to the invention,

Figure 2 is a section taken on the line II-II of Figure 1, on an enlarged scale, and

Figure 3 is a view of the coil illustrated in Figures 1 and 2 from above.

With reference to the drawings, an ignition coil, intended particularly for use in a static-distribution ignition system for the controlled-ignition internal-combustion engine of a motor vehicle, comprises a casing 1 of electrically insulating material substantially in the form of an inverted cup, within which a magnetic core 3 formed by laminations, for example, of iron-silicon alloy with oriented grains, a secondary winding 3 and, around the latter, a primary winding 4 are arranged coaxially in a known arrangement. An annular skirt 5 of magnetic material, in which the magnetic flux is contained, is arranged around the primary winding (Figure 2).

In Figure 2, the ends of the primary winding 4 are indicated 4a and 4b. These ends, like an end 3b of the secondary winding, are connected to an electrical connector, not illustrated in the drawings.

The other end 3a of the secondary winding 3, as shown in Figure 2, extends through a hole 1a formed in the upper wall of the casing 1. An integral external appendage 10 extends from the central portion of this wall and has a threaded end portion.

The upper wall of the casing 1 has an external pair of circular projections 6 and 7 coaxial with the appendage 10, between which a circular groove, indicated 8, is defined.

An annular electrical terminal, indicated 9, constituted, for example, by a brass ring, is situated around the base of the appendage 10 of the casing 1, inwardly of the ridge 7. The end 3a of the secondary winding 3 of the coil is connected to this annular terminal, for example by soldering.

A substantially bell-shaped cover element 12 is mounted for rotation about the appendage 10 of the casing 1 and has a lower flanged portion which bears on the projections 6 and 7 of the casing. The flanged portion of the cover element has an annular projection 13 which extends into the annular groove 8 of the casing.

The cover element 12 has a peripheral notch 14 through which a high-tension lead 15 extends for connection to a plug of the ignition system. Within the cover element 12, the end of the lead 15 is connected to a substantially C-shaped contact member 16 (Figure 2) arranged with its convexity facing the axis of the appendage 10 of the casing 1. A side arm of the member 16 is in contact with the conductor ring 9. The lead 15 is therefore connected to the terminal 3a of the secondary winding through the sliding contact member 16 and the conductor ring 9.

The cover element 12 can obviously be arranged in any angular position relative to the casing 1, so that the lead 15 extends in the direction which is most convenient for its mounting and for the wiring. A nut 18 screwed onto the threaded portion of the appendage 10 of the casing of the coil enables the cover element 12 to be clamped in the angular position desired from time to time.

The projection 8 of the cover element (which is broken only in correspondence with the passage 14 through which the lead 15 extends) forms, together with the projections 6 and 7 of the casing of the coil, a sort of labyrinth for preventing the penetration of dirt and lengthening the path of any discharge which may be struck between the annular contact 9 and the earth of the motor vehicle.

Claims

1. An ignition coil, particularly for static-distribution ignition systems for motor vehicles, comprising:
a casing (1) of electrically insulating material in which a primary winding (4) and a secondary winding (3) are housed, and
connecting means (9, 16) for enabling the electrical connection of one end (3a) of the

secondary winding (3) to a high-tension lead (15) for connection to a sparking plug,
characterised in that the connection means comprise:
an annular electrical terminal (9) situated around an appendage (10) of the casing (1) and connected to the end (3a) of the secondary winding (3),
an electrically insulating cover element (12) mounted for rotation about the appendage (10) of the casing (1) on the annular terminal (9) and carrying a contact element (16) to which one end of the high-tension lead (15) is connected, the contact member (16) being slidable on the annular terminal (9) due to the rotation of the cover element (12) relative to the casing (1), and
clamping means (18) for enabling the cover element (12) to be positioned and retained in any desired angular position relative to the casing (1).

2. An ignition coil according to Claim 1, characterised in that the contact member is constituted by a substantially C-shaped metal element (16) to which the high-tension lead (15) is connected centrally, the C-shaped member (16) being situated between the cover element (12) and the annular terminal (9) with its convexity facing the axis about which the cover element (12) can rotate and with an end in contact with the annular electrical terminal (9).

3. An ignition coil according to Claim 1 or Claim 2, characterised in that the appendage (10) is threaded and the clamping means comprise a nut (18) screwed onto the appendage (10) so as to clamp the cover element (12) against the casing (1).

4. An ignition coil according to any one of the preceding claims, characterised in that the cover element (12) has a seat in which the sliding contact member (16) is housed, and a side opening (14) for the passage of the lead (15).

5. A ignition coil according to any one of the preceding claims, characterised in that the cover element (12) is bell-shaped and has a projection (13) which extends into a circular groove (8) defined between a pair of concentric circular projections (6, 7) of the casing (1) so as to form a labyrinthine path.

FIG. 1

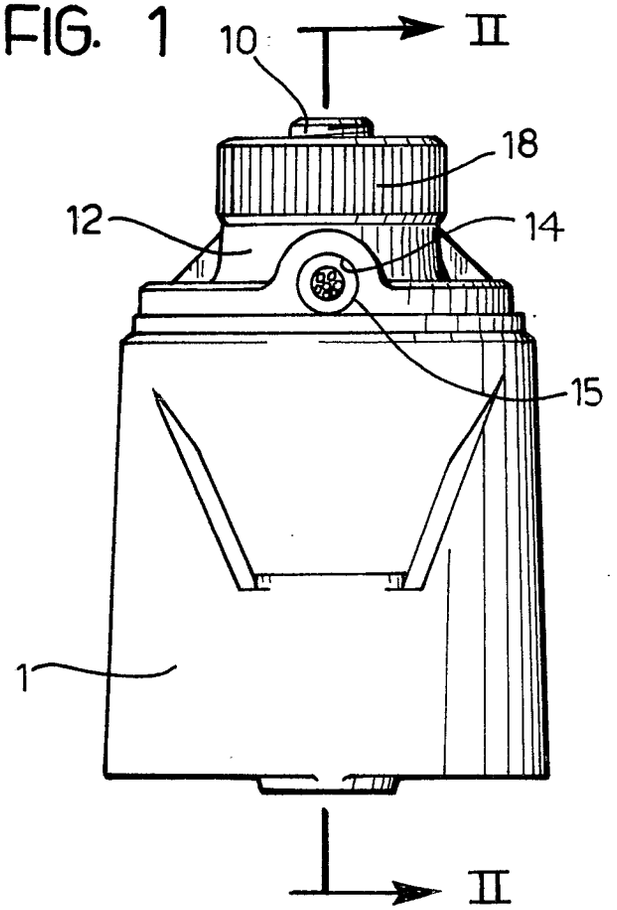


FIG. 3

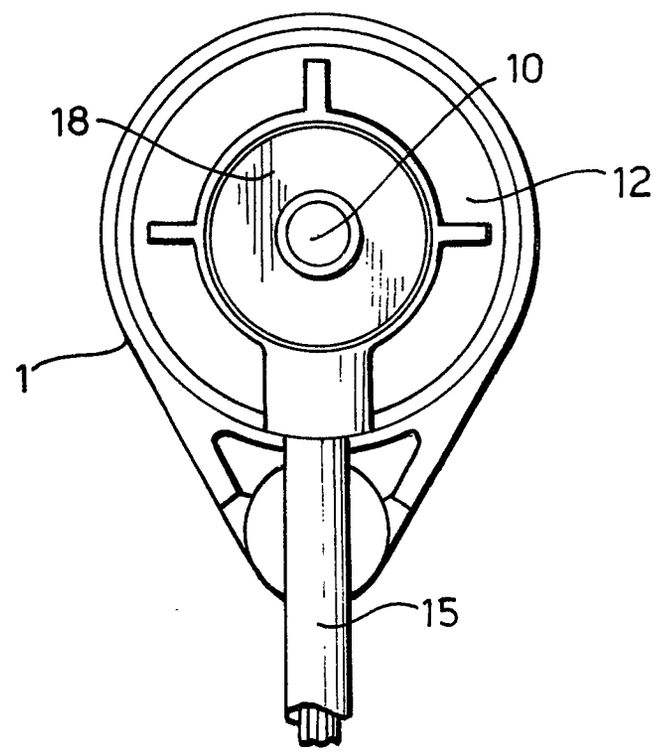
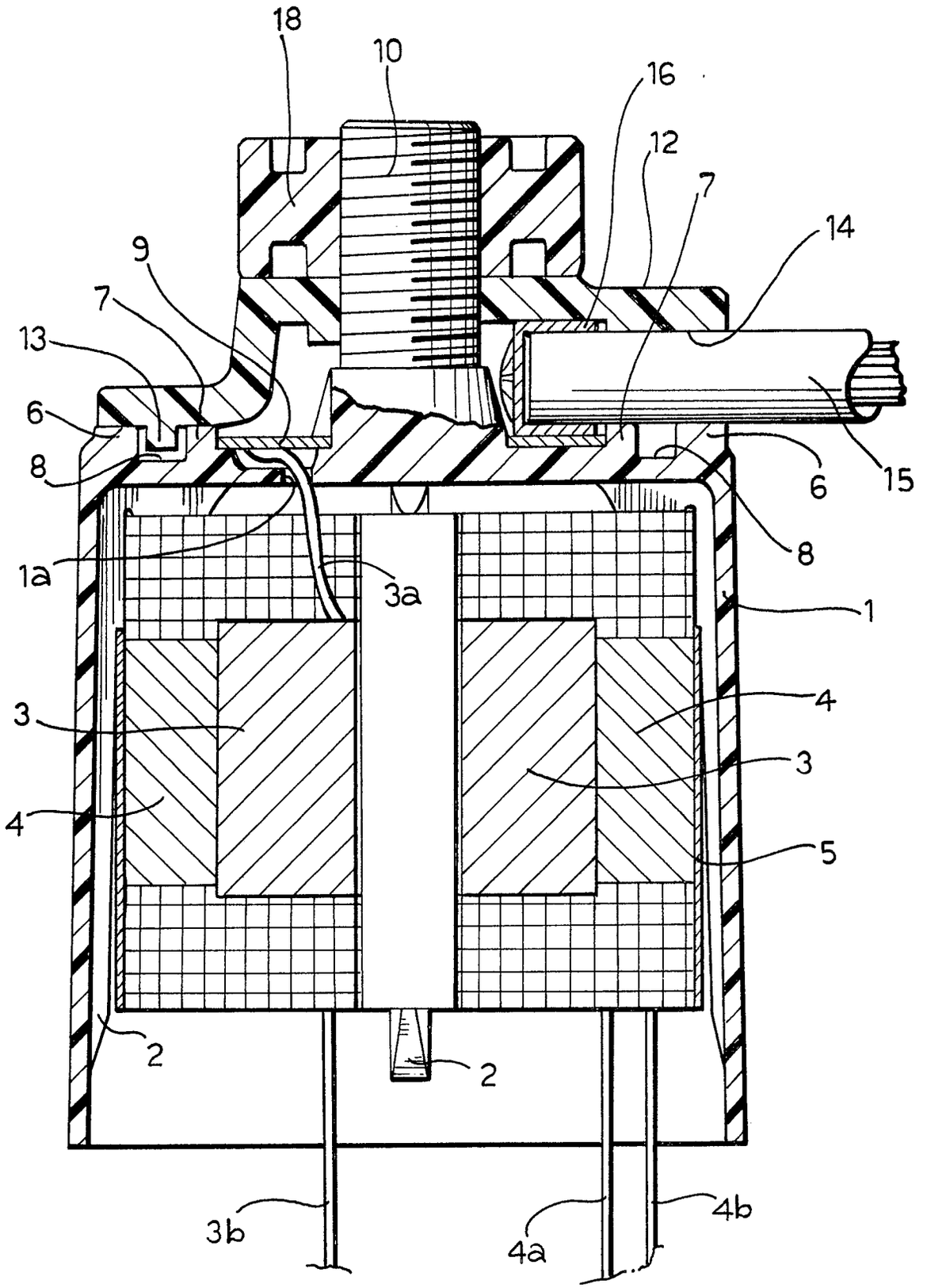


FIG. 2



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EUROPEAN SEARCH REPORT

Application Number

EP 88 83 0507

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	FR-A-2227607 (BRITISH LEYLAND) * page 2, line 19 - line 21; figure 1 * ---	1	H01F31/00
A	US-A-3960427 (PIAGET) * column 1, line 63 - column 2, line 40; figures 1-3 * -----	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

H01F
H01R

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	17 MARCH 1989	BIJN E.A.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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