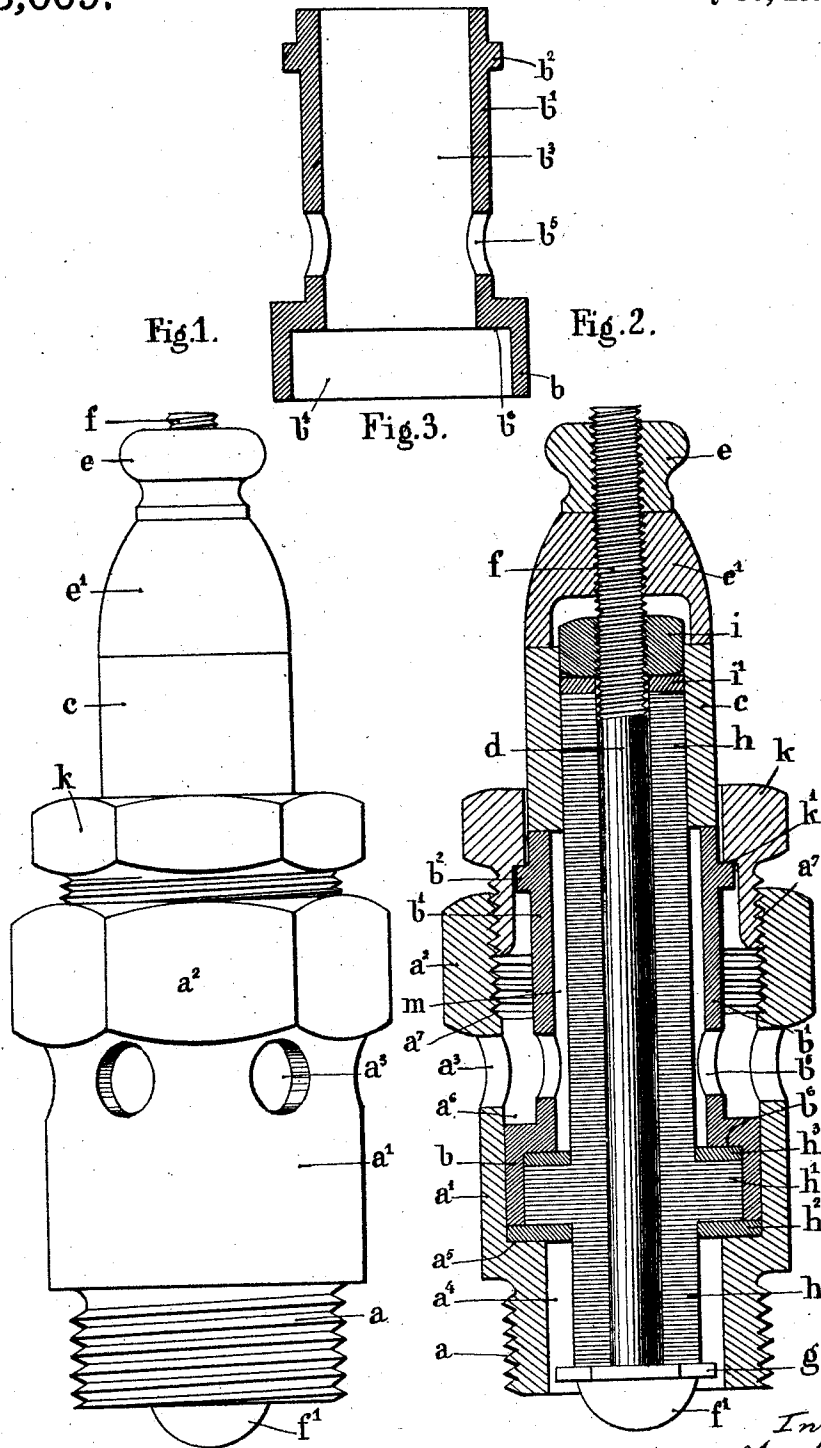


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SPARKING PLUG FOR INTERNAL COMBUSTION ENGINES.
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1,418,009.

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UNITED STATES PATENT OFFICE.

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SPARKING PLUG FOR INTERNAL-COMBUSTION ENGINES.

1,418,009.

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To all whom it may concern:

Be it known that I, JOSÉ MARTINEZ, a subject of the King of Spain, and a resident of 22 Rue du Pont Neuf, Paris, France, have invented new and useful Improvements in a Sparking Plug for Internal-Combustion Engines, (for which I have filed applications in France Jan. 14, 1919; in Great Britain Dec. 20, 1919; in Germany June 22, 1920; in Italy June 22, 1920; in Belgium June 23, 1920; in Switzerland June 23, 1920; in Spain June 22, 1920, and in Cuba Aug. 31, 1920), of which the following is a specification.

The present invention relates to a sparking plug for internal combustion engines, in which the sheath or fitting, of insulating material, threaded upon the central electrode, is surrounded by a metal ring, fitted within the body of the plug and carrying the pressure exerted by the tightening nut which is screwed in the body of the sparking plug; this arrangement has for its object to avoid the damage of the insulating fitting of the electrode as is the case when the tightening nut directly acts upon said insulating fitting.

The said ring, upon which bears the tightening pressure of the nut, is provided, at its lower part, with a bore of larger diameter, which surrounds and allows of centering a part, of larger diameter, of the insulating fitting of the electrode, which is held in place between a shoulder of said body of the plug and a shoulder of said loose ring. The ring is located, on the greatest part of its length, at some distance from the insulating fitting of the electrode, so as to allow of the free expansion thereof; this ring is provided with vents or holes, which, together with corresponding holes provided in the metal body of the plug, allow of a circulation of cooling air in the interior of the plug, around the insulating fitting of the electrode.

The electrode is surrounded, at its exterior end, with a tubular insulating part, which is seated on the loose ring and held by a nut screwed on the said end of the electrode.

This arrangement moreover enables the central electrode to be dismantled very easily and to be readily replaced, when worn out, without having to unscrew the body of the plug.

The ring, surrounding the insulating sheath of the central electrode, assures

always for this electrode a perfect centering without any possible deformation once it has been put in place.

In the annexed drawings:

Fig. 1 shows the improved sparking plug in elevation.

Fig. 2 is a vertical axial section thereof.

Fig. 3 is a vertical axial section, separately, of the metal ring adapted to center and to hold in place the central electrode.

The sparking plug comprises a metal body, provided with a screwthreaded socket a at its lower part, a cylindrical middle part a^1 and a polygonal head a^2 at its upper part, for the screwing of the plug; the cylindrical part a^1 of the body is pierced with vent holes a^3 . This metal body is provided with a cylindrical bore a^4 , above which is provided another cylindrical bore a^5 , of larger diameter than the first; a shoulder a^6 is thus formed at the lower part of the bore a^5 . The said bore a^5 is provided with an internal screw-thread at a^7 .

Within the body of the plug is fitted a metal cylindrical ring, comprising a lower cylindrical part of large diameter, b , surmounted by a cylindrical part b^1 of less diameter; the latter is provided at its upper part with a flange b^2 . The ring thus comprises a cylindrical bore b^3 and another concentric bore b^4 , of larger diameter (Fig. 3).

The ring b b^1 is surmounted by a tubular fitting c , of insulating material, upon which bears, with interposition of a cap e^1 , a nut e , screwed upon the screwthreaded rod f of the central electrode d .

The latter comprises the axial rod f having at its lower end a head f^1 , on which is threaded first a star g , of inoxydizable metal, and then a sheath h , formed with mica washers, tightened by a nut i , with interposition of a washer i^1 . This sheath comprises at a certain height mica washers of larger diameter, h^1 , which are fitted within the bore b^4 , of larger diameter, of the ring b b^1 ; the whole constitutes the central part of the plug.

The said whole, located within the body a a^1 of the plug, is maintained in position by a nut k , screwed into the internal screw-thread a^7 of the body; this nut k bears by an interior shoulder k^1 on the flange b^2 of the ring b b^1 , in such a manner as to press the mica washer h^1 between, on the one hand, the shoulder a^5 of the body a , with interposition of a metallo-plastic joint h^2 , and, on the

other hand, the shoulder b^6 of the ring $b\ b^1$, with interposition of the metallo-plastic joint h^3 .

The part b of the ring centers the whole central part of the plug within the bore a^6 of the body a of the plug, without it being possible to produce any deformation, at the same time as the nut k maintains the said central part in position.

10 Air passes through the vent holes a^3 of the body and the vent holes b^5 of the ring, to cool the interior of the plug by circulating in the chamber m , provided between the insulating fitting h of the electrode and the
15 bore b^2 of the ring.

In order to withdraw from the body the whole central part of the plug, *i. e.*, the central electrode with its insulating fitting, it is sufficient to unscrew the retaining nut k ; then, by unscrewing the nut c and raising
20 the cap e^1 , the tubular fitting c and the ring $b\ b^1$, the central electrode may be separated.

What I claim is:

1. A spark plug, comprising a hollow
25 metal body having an internal shoulder in its lower portion, a packing ring resting on said shoulder, a central electrode, an insulating fitting surrounding said electrode and having an enlarged portion bearing on
30 said packing ring, a second packing ring upon the upper face of said enlarged portion, a metallic ring having an upper portion loosely surrounding the upper portion of
35 said fitting and bearing at its lower end upon said second packing ring, said metallic ring having a lower portion of increased diameter closely fitted within the metal body and closely surrounding the enlarged por-

tion of said fitting and bearing at its lower end upon said first-mentioned packing ring, 40 and a nut screwed into the upper end of the metal body and bearing upon the metal ring whereby to clamp the enlarged portion of the insulating fitting between the lower end of the upper portion of the metal ring 45 and the internal shoulder of the metal body.

2. A spark plug, comprising a hollow metal body having an internal shoulder in its lower portion, a packing ring resting on said shoulder, a central electrode, an insulating fitting surrounding said electrode 50 and having an enlarged portion bearing on said packing ring, a second packing ring upon the upper face of said enlarged portion, a metallic ring having an upper portion 55 loosely surrounding the upper portion of said fitting and bearing at its lower end upon said second packing ring, said metallic ring having a lower portion of increased diameter closely fitted within the metal body and 60 closely surrounding the enlarged portion of said fitting and bearing at its lower end upon said first-mentioned packing ring, a nut screwed into the upper end of the metal body and bearing upon said metal ring, a tubular 65 insulating fitting bearing upon said metal ring, a cap bearing upon said fitting, and a nut screwed upon the upper end of the central electrode and bearing upon said cap.

In testimony whereof I have signed my name to this specification. 70

JOSÉ MARTINEZ.

Witnesses:

P. ARMEGAND,
M. DEFÉORIMONT.