Nov. 10, 1936. M. O'MARRA 2,060,340

SPARK PLUG

Filed Dec. 31, 1934

FIG. 1

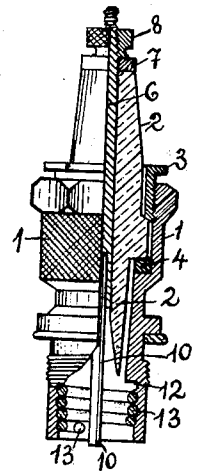


FIG. 4

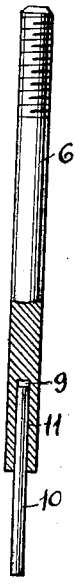


FIG. 5

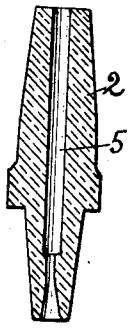


FIG. 2

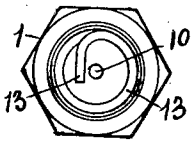
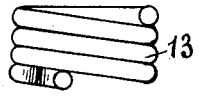


FIG. 3



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Patented Nov. 10, 1936

2,060,340

UNITED STATES PATENT OFFICE

2,060,340

SPARK PLUG

Martin O'Marra, New York, N. Y.

Application December 31, 1934, Serial No. 759,978
In Luxembourg August 11, 1934

1 Claim. (Cl. 123—169)

This invention has relation to a sparking-plug for explosion motors and is especially characterized in that the central positive electrode and the negative electrode are interchangeable.

In accordance with my present invention the sparking-plug is provided with a central electrode of suitable metal having at its lower end an aperture to receive an electrode wire of smaller diameter. The lower internal circumference of the body of the sparking-plug is provided with a groove having, in cross section, a semi-circular shape and forming a helix for the reception of the helically coiled negative electrode wire. The lower end of this wire is bent towards the central electrode wire in such manner that a correct spark gap is provided between the same.

The invention further includes these novel details of construction, combination and arrangement of parts, which will be fully described reference being had to the accompanying drawing, in which:—

Fig. 1 is part sectional elevation of the sparking-plug illustrating the parts constructed and assembled in accordance with the subject matter of my invention;

Fig. 2 is a plan view of the underside of the sparking-plug;

Fig. 3 is an enlarged view of the helically coiled negative electrode wire of the said sparking-plug;

Fig. 4 is an enlarged view of the central positive electrode;

Fig. 5 is a sectional elevation of the central electrode insulator.

The same letters refer to the same parts in all figures of the drawing.

According to my invention the body 1 of the sparking-plug which is preferably constructed of aluminium but may be of any other suitable metal, is provided centrally with an insulator 2 of porcelain, mica or other insulating material and which insulator is held in position by a lock-nut 3. A gasket 4 is located between the body 1 and insulator 2 to form a gas tight joint.

The central portion of the insulator 2 has a bore 5, as shown in Figure 5, in which is mounted the metallic positive electrode 6. This electrode is screw-threaded at its upper end to receive the lock-nut 7 and thumb screw 8 between which the electric current carrying cable is fastened to the said electrode. The lower end of the electrode 6 is provided with a bore 9 to receive the metallic electrode 10, which may be provided with an integral key 11 to fit into a groove formed in the bore 9 of the electrode 6 and thereby remain firmly in position. A small groove is also cut in the bore of the electrode to enable the air to escape from the same when the member 10 is inserted.

Into the lower internal circumference of the body 1 of the sparking-plug a thread 12, of semi-circular shape is cut into which the helically coiled round wire 13 is screwed to form the negative electrode of the said sparking-plug. In order to obtain the correct gap to enable the electric curruent to jump from the positive electrode 10 to the negative electrode 13 the lower end of the said negative electrode wire is bent inwardly towards the central electrode 10, as shown in Figure 2. For this purpose a small sleeve may be passed over the lower end of the positive electrode and the end of the negative wire moved against the outer wall of the said sleeve, or the usual spark-gap gauge may be employed to obtain the correct gap between the two members.

It will be seen from the foregoing description that I provide a sparking-plug for internal combustion engines in which the worn electrodes may be readily replaced without dismantling the other parts of the said plug and that thereby the same will permit a successful employment over an unlimited period of time, first by cutting off the worn end of the negative electrode wire and bending the said wire further back to bring its end again in line with the positive electrode and, after the helical coil of wire forming the negative electrode has been cut so that only one convolution of the wire remains to retain it firmly in position, that both electrodes 10 and 13 can be readily replaced by new spares. It is to be understood that the sparking-plug as hereinbefore described may be constructed in all forms and sizes to suit the various models of explosion motors in use, and that various suitable diameters of wire may be used for the positive and negative electrodes.

Having now particularly described my invention what I claim as new and desire to protect by Letters Patent is:—

A spark plug comprising a tubular metallic body having a spiral groove formed by a plurality of convolutions in the periphery thereof, a positive metallic electrode comprising an upper portion supported axially in the metallic body and insulated therefrom and having an axial bore in its lower end and a lower portion slidable firmly within the axial bore to hold it in any downwardly adjusted position, and a negative electrode formed by a bendable metallic coil comprising a plurality of convolutions adapted to be screwed into the spiral groove of the body and to be bent at its lower end towards the positive electrode and re-bent as the bent portion burns away to form the proper spark gap.

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