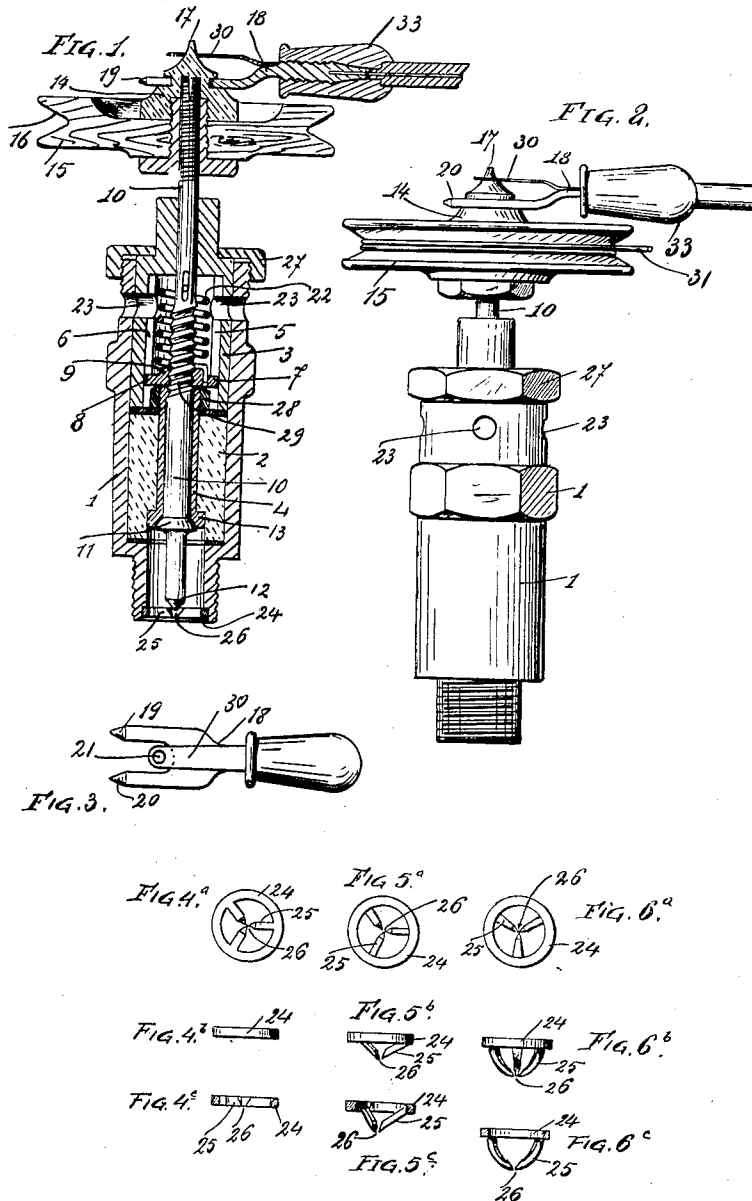


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SPARKING PLUG FOR INTERNAL COMBUSTION ENGINES.
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1,173,393.

Patented Feb. 29, 1916.



Witnesses:

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UNITED STATES PATENT OFFICE.

CARLO SPADA, OF MILAN, ITALY.

SPARKING PLUG FOR INTERNAL-COMBUSTION ENGINES.

1,173,393.

Specification of Letters Patent.

Patented Feb. 29, 1916.

Application filed February 19, 1914. Serial No. 819,763.

To all whom it may concern:

Be it known that I, CARLO SPADA, a subject of the King of Italy, residing at 3 Via Alessandria, Milan, in the Kingdom of Italy, have invented new and useful Improvements in Sparking Plugs for Internal-Combustion Engines, of which the following is a specification.

The present invention relates to a sparking plug for internal combustion engines in which the points between which the spark igniting mixture passes, can be cleaned mechanically from a distance and also directly by hand even during the running of the engine and without the necessity for shutting off the current.

Various embodiments of the invention are illustrated by way of example in the accompanying drawing, in which—

Figure 1 is a vertical sectional view, and Fig. 2 an elevation view of the improved spark plug; Fig. 3 is a top view of the current feeding member. The groups of Figs. 4^a, 4^b, 4^c, 5^a, 5^b, 5^c, 6^a, 6^b, 6^c, each comprise top, elevation and sectional views of various constructional forms of electrodes.

Referring to Figs. 1 and 2, in the recess of the base 1 of the plug which is formed of a material which is a conductor of electricity a tube 2 and a hollow cylindrical sleeve 3 are housed; both these parts are of insulating material such for example as steatite and they are fixed in the recess referred to above by a nut or screw cap 27. In the tube 2 is inserted a small metal tube 4 presenting at its lower extremity a flared portion 13 presenting the form of a valve seat; it is provided at its other extremity with screw threads entering a nut 28 which presses the two tubes 2 and 4 one against the other. The protuberance 11 on the spindle 10 which is conical or presents the form of a spherical segment in resting against the valve seat 13 prevents the passage of the gases. Internally the insulating tube is provided with two or more channels 5 and 6 in which slide corresponding projections 7, 8 from a disk carrying a long pitch nut intended to be screwed onto a similar thread 29 formed on the spindle 10 provided below with the protuberance 11 and at its lower extremity provided with a conical point 12. It is continued above, beyond the insulating sleeve 3 and appropriately fixed at its upper extremity by means of the small bolt 14 for example, it carries a small wheel 15 of insu-

lating material with channeled periphery 16. The small bolt 14 comprises a peripheral channel and a point 17. The channel is intended for the reception of the teeth 19 and 20 of a fork 18 (Figs. 1, 2 and 3) connected with the wire conducting the current while the point enters a hole 21 in a spring 30 integral with the body of the fork 18. This spring serves to connect the fork 18 but in such a manner that it is able to rotate; this fork carries the positive conducting wire for example which is conducted to the spindle 10 whose point 12 constitutes one of the poles of the sparking plug.

In the recess of the insulating sleeve 3 a spiral spring 22 is housed; this spring is fixed in a convenient manner by one of its extremities to the disk 9 and by its other extremity to the spindle 10. In order to afford ventilation for the parts which are liable to become excessively heated by the engine seeing that they are in contact with it, ventilating apertures 23 are formed through the base 1 and the insulating sleeve 3. To the lower extremity of the base 1 a ring 24 is screwed which is provided with one or more projections 25 converging toward the center but not contacting.

In order to permit of completely cleaning the opposed surfaces of the electrodes 12 and 26, the points 26 of the projections 25 are chamfered in such a manner that they fit exactly the surface of the point 12 of the spindle 10.

The projections 25 from the ring 24 may present a form differing from the plane form represented in Figs. 1, 4^a, 4^b, 4^c, that is to say they might be oblique as shown in Figs. 5^a, 5^b, 5^c; curved as shown in Figs. 6^a, 6^b, 6^c, or of any other form provided that their points 26 are chamfered in such a manner as to correspond to the form of the point 12 of the spindle 10 so that the complete and mutual cleaning of the surfaces 12 and 26 of the electrodes can be effected in the same manner as when a pencil is pointed in employing a pencil sharpener. Normally, as shown in Fig. 1, the poles are separated in such a manner that when the electric current flows, the sparks required for ignition are able to pass. If it be desired to clean the points 12 and 26 of the sparking plug without stopping the engine, the small hand wheel 15 is rotated (either by hand or by means of a cord 31 arranged in the channel 16, Fig. 2, and suitably

guided) in the direction of the screw thread 29 or in the opposite direction to the tension of the spring 22; in this manner the spindle 10 is first of all depressed until its point 12 contacts with the points 26 thus closing the circuit and then in continuing to rotate, mutual friction between the points 12 and 26 will be produced, whereby they are cleaned while the disk 9 will rise in sliding with the projections 7 and 8 between the channels 5 and 6. When the wheel 15 is released, the spring 22 will return the mechanism to its initial position, that is to say to the ignition position.

15 What I claim and desire to secure by Letters Patent of the United States is:

1. A sparking plug for an internal combustion engine comprising an electrode constituted by a partially screw threaded spindle having a pointed end, said spindle engaging a screw-threaded member slidably disposed within a chamber in the plug body, a second electrode constituted by a plurality of radially disposed points chamfered on their inner faces in a manner exactly corresponding to that of the point of the first-mentioned electrode, means for depressing

and rotating the first-mentioned electrode, a spring for returning the said electrode to its initial position, a valve on the said spindle and a valve seat within the body of the said plug. 30

2. A sparking plug for an internal combustion engine comprising an electrode constituted by a partially screw threaded spindle having a pointed end, said spindle engaging a screw threaded member slidably disposed within a chamber in the plug body, a second electrode constituted by a plurality of radially disposed points correspondingly chamfered on their inner faces to that of the point of the first mentioned electrode, means for depressing and rotating the first mentioned electrode, a spring for returning the said electrode to its initial position, a valve on the said spindle and a valve seat within the body of the said plug. 35 40 45

In testimony whereof I affix my signature in presence of two witnesses.

CARLO SPADA.

Witnesses:

CARLO SALVOTTI,
GUADO CONARD Bys.