Feb. 3, 1925.

1,525,083

C. F. MEYER

SPARK PLUG

Filed Feb. 12, 1923

Fig. 1.

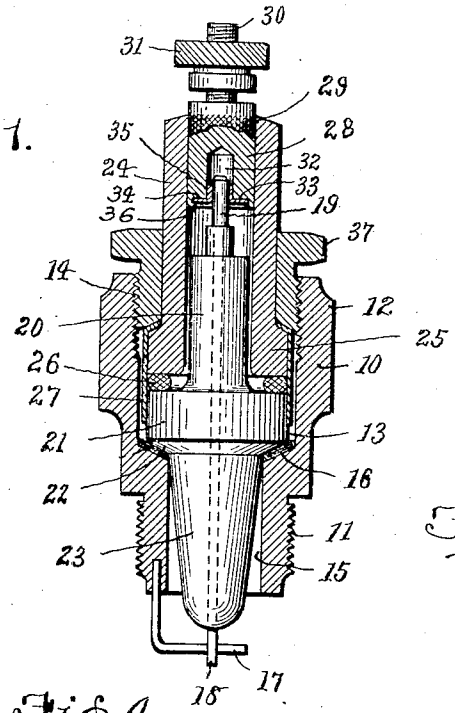


Fig. 3.



Fig. 6



Fig. 2.

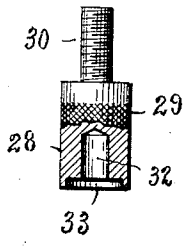


Fig. 4.

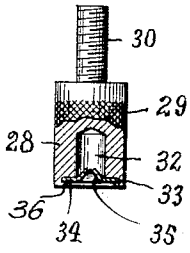
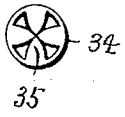


Fig. 5.



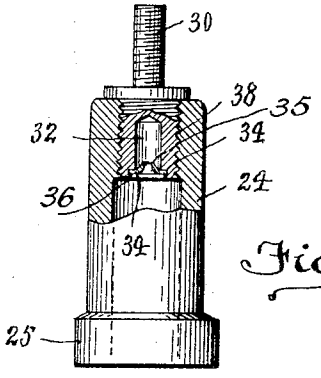


Fig. 7.

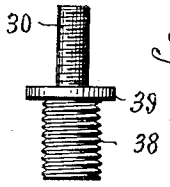


Fig. 8.

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Patented Feb. 3, 1925. 1,525,083

UNITED STATES PATENT OFFICE.

CHARLES F. MEYER, OF BRIDGEPORT, CONNECTICUT.

SPARK PLUG.

Application filed February 12, 1923. Serial No. 618,623.

To all whom it may concern:

Be it known that I, CHARLES F. MEYER, a citizen of the United States, and resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Spark Plugs, of which the following is a specification.

This invention relates to an improved spark plug for explosion engines, and is an improvement upon the type of plug shown in my prior Patents #1,109,004 of September 1, 1914 and #1,344,954 of June 29, 1920.

An object of the invention is to provide a plug in which the parts may be readily assembled and dissembled for the purpose of cleaning or adjustment, and in which a single conducting rod is provided in direct and separable connection with terminal element. A further object is to provide a terminal element having a porcelain sleeve, and connection means for the conducting rod, removed from contact with such sleeve, so that danger of cracking the porcelain is entirely eliminated.

A still further object is to provide a connection means which will insure a tight gripping contact with the conducting rod, and which at the same time will enable the connecting rod to be readily separated.

Still another object is to provide a construction in which the porcelain parts may be entirely protected from breakage through tightening of the assembling nut.

With the above and other objects in view, an embodiment of the invention is shown in the accompanying drawings, and this embodiment will be hereinafter more fully described with reference thereto, and the invention will be finally pointed out in the claims.

In the drawings:

Fig. 1 is a central vertical sectional view of a spark plug according to the present embodiment of my invention, and showing the same completely assembled;

Fig. 2 is a view partially in vertical section of the terminal member, and before being provided with the connection means;

Fig. 3 is a bottom plan view thereof;

Fig. 4 is a view, similar to Fig. 2 and showing the terminal member provided with the connection means;

Fig. 5 is a plan view of the connection means;

Fig. 6 is an elevation of the conducting rod, before being provided with its porcelain sheath;

Fig. 7 is a view, partially in vertical section, of a slightly modified form of terminal member; and

Fig. 8 is an elevation thereof, detached from its porcelain sleeve.

Similar reference characters indicate corresponding parts throughout the several figures of the drawings.

Referring to the drawings, the spark plug comprises a metal casing 10, having a reduced threaded lower end 11, adapted to be screwed into the threaded hole of an engine cylinder, the upper portion 12 of the casing being of hexagonal or other suitable shape, to permit engagement of a wrench. The bore through the casing comprises a relatively wide chamber or pocket 13, threaded at its upper portion, as at 14, a reduced passage 15, and an inclined annular shoulder or seat 16 forming a base for the chamber 13. A sparking point 17 is provided at the lower end of the casing, and acts in conjunction with the conducting rod presently to be referred to.

The conducting rod 18 is provided at its upper end with a shouldered head piece 19 suitably secured thereto, and is surrounded, from the head piece to within a short distance from its lower end by a porcelain sheath, the exposed end adapted to be placed in opposed and spaced relation to the sparking point 17, as will be understood.

The porcelain sheath comprises an upper cylindrical portion 20, an intermediate flange portion 21, the lower surface of which is beveled and adapted to seat upon a gas tight ring 22 disposed upon the shoulder 16, and a tapered lower portion 23 extending through the passage 15 of the casing. The seating ring 22 is preferably formed of copper-sheathed asbestos.

An upper porcelain sleeve 24 is adapted to telescopically and loosely engage upon the cylindrical portion 20 of the lower porcelain sheath, its lower enlarged and shouldered portion 25 being of corresponding diameter to the flanged portion 21 of the sheath, and adapted to seat upon a yieldable gasket 26 disposed upon said flanged portion. A metal collar 27, flanged inwardly at its upper end, is engaged upon the portion 25 of the upper porcelain, and is adapted to telescopically engage the flanged

portion 21 and close the space between the two porcelains, the outer diameter of the collar being slightly less than the diameter of the chamber 13, so that the assembled porcelain structure may be readily inserted therein.

At the upper end of the porcelain sleeve 24 there is provided a terminal member 28, its outer surface being knurled, as at 29 and rigidly connected to the porcelain sleeve, which in manufacture is molded about the knurled surface. A threaded post 30 is provided at the upper end of the member to secure the binding nut 31, while its lower end is provided with an annular recess 32 and a smaller diameter socket 33, adapted in the assembled relation of the plug to receive the head 19 of the conducting rod.

Within the recess 32 there is inserted a plate 34, having a plurality of inwardly directed radial prongs 35 formed therein, the plate being secured within the recess by slightly bending over the edge, as at 36. The prongs 35 are bent into the socket 33, as indicated in Fig. 4, and upon assembling of the two porcelains, receive between them the head 19 of the conducting rod, in a manner to tightly grip it, and at the same time permit of separation of the parts, when desired.

The several parts of the plug are secured in their proper relation by means of a closure cap 37 screwed into engagement with the upper threaded portion 14 of the chamber 13, and bearing upon the flanged end of the collar 27, in a manner to forceably press the upper porcelain toward the lower porcelain, and the latter into tight engagement with the seating ring 22.

In Figs. 7 and 8 there is illustrated a modified form of terminal member, in which the outer surface is threaded, as at 38, and provided with a limiting flange 39, which engages upon the upper end of the porcelain sleeve. The porcelain sleeve is molded about the threaded structure in a similar manner to the first form of the invention.

The telescoping adjustable relation between the conducting rod and the terminal member, is such as to preclude any possibility of fracture to the porcelain through the force exerted in securing the cap in place; and at the same time a positive and reliable electrical connection is provided. It is evident that the parts may be readily disassembled, when desired for the purpose of cleaning, adjustment or replacement of parts.

I have illustrated preferred and satisfactory embodiments of the invention, but it is obvious that changes may be made therein, within the spirit and scope thereof, as defined in the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:—

1. A spark plug, comprising a tubular casing threaded for attachment to a motor cylinder, and having an extended sparking point, a pair of upper and lower porcelain members, the upper member being tubular, a conducting rod extending through the lower member and projecting at each end to provide a sparking point and a connection portion, a terminal member carried in the passage through the upper member and having a socket in its lower side, a plate secured at the lower side of said terminal member and having a plurality of inwardly extending radial prongs extended into said socket, said connection portion of the conducting rod adapted to be engaged between said prongs in the assembled relation of the members, and a removable closure cap on the casing adapted to engage said upper porcelain member to retain both porcelain members in the casing.

2. A spark plug, comprising a tubular casing threaded for attachment to a motor cylinder, and having an extended sparking point, a pair of upper and lower porcelain members, the upper member being tubular, a conducting rod extending through the lower member and projecting at each end to provide a sparking point and a connection portion, a terminal member carried in the passage through said upper member and having an annular recess in its lower side and a smaller diameter socket in said recess, a plate disposed in said recess and having a plurality of inwardly extending radial prongs extended into said socket, said connection portion of the conducting rod adapted to be engaged between said prongs in the assembled relation of the members, and a removable closure cap on the casing adapted to engage said upper porcelain member to retain both porcelain members in the casing.

Signed at Bridgeport in the county of Fairfield and State of Connecticut this 9th day of February, A. D., 1923.

CHARLES F. MEYER.

Witnesses:
C. M. NEWMAN,
LILLIAN M. ALLING.