E. H. M. MEYER.

ELECTRIC SPARK PLUG.

APPLICATION FILED JAN. 28, 1916.

1,210,668.

Patented Jan. 2, 1917.

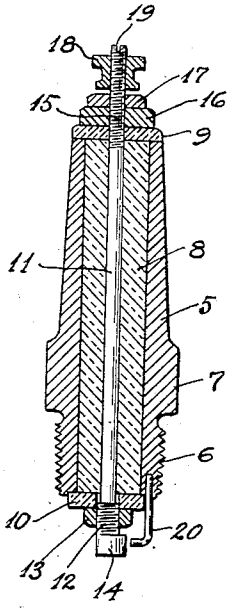


FIG. 1

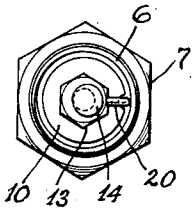


FIG. 2

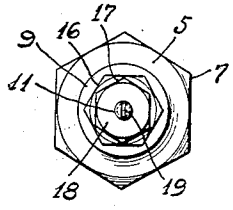


FIG. 3

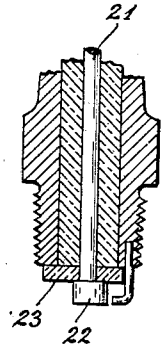


FIG. 4

WITNESS

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UNITED STATES PATENT OFFICE.

EARL H. M. MEYER, OF SEATTLE, WASHINGTON.

ELECTRIC SPARK-PLUG.

1,210,668. Specification of Letters Patent. Patented Jan. 2, 1917.

Application filed January 28, 1916. Serial No. 74,893.

To all whom it may concern:

Be it known that I, EARL H. M. MEYER, citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented a certain new and useful Improvement in Electric Spark-Plugs, of which the following is a specification.

My invention relates to improvements in electric spark-plugs for internal combustion engines, and the object of my invention is to provide an electric spark-plug, one of whose two electrodes shall be adapted to be adjustably moved, both rotatively and in a lengthwise direction, to different positions with respect to the other one thereof, as may be desired, either to change its distance from said other one to vary the width of the spark-gap therebetween or to dispose an unused portion of its surface at a point directly opposite said other one of said electrodes.

A further object of my invention is to provide a spark-plug all of whose parts shall be so formed and assembled that said parts cannot be disarranged or injured by accidental concussion due to careless handling or rough usage.

I accomplish these objects by devices illustrated in the accompanying drawings wherein—

Figure 1 is a view in longitudinal mid-section of a spark-plug embodying my invention; Fig. 2 is a view of the same in one end elevation, showing that end which is to be disposed within the combustion chamber of an internal combustion engine; Fig. 3 is a view of the same in end elevation showing the other end thereof; and Fig. 4 is a fragmentary view in longitudinal mid-section of another spark-plug showing modified forms of parts of my invention embodied therein.

Like reference numerals designate like parts throughout the drawings.

Referring to the drawings, in Figs. 1, 2 and 3, a metal body portion 5 is provided with a screw-thread 6 on one of its end portions and with a hexagonal portion 7 disposed adjacent to said screw-thread 6, and is further provided with a concentrically disposed hole that extends throughout its length. Disposed within said hole, to extend throughout the length thereof, is a tightly fitted tube 8 having thick walls and made of material that is a non-conductor of electricity, which material, preferably, is of a character that adapts it to withstand a high temperature without materially impairing its quality as an insulator of electricity.

Affixed against the surfaces of each of the opposite ends of the tube 8 and the body portion 5 is an annular insulator, as insulators 9 and 10, the insulator 9 preferably being made of tough material that will not be injuriously affected by changes in temperature under normal conditions of use, as of vulcanized fiber, while the insulator 10 is made of a material that will withstand the high temperature to which it will be subjected when disposed within the combustion chamber of an internal combustion engine, as of steatite, porcelain or mica.

Disposed to extend through the insulator 10, the tube 8 and the insulator 9 is a metal rod 11, preferably of steel, which is thus insulated from the body portion 5; and that end portion of said rod 11 adjacent to the insulator 10 is provided with a screw-thread 12 upon which is disposed a nut 13 that is screwed against the outer face of the insulator 10, and adjacent to the outer face of the nut 13 the rod 11 terminates in an integral eccentrically disposed electrode 14 of larger diameter.

The opposite end portion of the rod 11 projects outwardly through the insulator 9 and such end portion is provided with a screw-thread 15 upon which is disposed a nut 16, a check-nut 17 and a thumb-nut 18.

The nut 16 is screwed against the outer face of the insulator 9, and the check-nut 17 is forced against the outer face of the nut 16, while the thumb-nut 18 may be screwed against a connecting wire (not shown) of an electric circuit to bind such wire against the outer face of the check-nut 17.

The screw-threaded end of the rod 11, that projects beyond the thumb-nut 18, is provided with a slot 19 within which may be inserted the blade of a screw-driver in the operation of rotatively moving said rod 11, when the nuts 13 and 16 and check-nut 17 are loosened.

Securely fixed in the end of the body portion 5, at a point between the edge of the tube 8 and the bottom of the grooves of the screw-thread 6, is an electrode 20, preferably of steel, formed to project in a line parallel with the rod 11 for a distance beyond the nut 13 where it is bent to a right angle to-

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ward the electrode 14 to terminate at a point that will provide a spark-gap of a desired minimum width when the eccentrically formed electrode 14 is relatively disposed as shown in Fig. 2.

Preferably the screw-thread 6 is of the size and pitch of a standard half-inch pipe thread thereby to correspond with the screw-thread of the spark-plugs most commonly employed heretofore in connection with internal combustion engines.

Manifestly, my spark-plug as illustrated in Figs. 1, 2 and 3 is so constructed that its electrode 14 may be moved in a lengthwise direction to present a fresh surface adjacent to the electrode 20 by the manipulation of the nuts 13, 16 and the check-nut 17 in a well known manner; and also the width of the spark-gap between said electrodes 14 and 20 may be changed, as desired, by turning the rod 11 with a screw-driver applied to the slot 19 while said nuts are loose.

In Fig. 4 I have illustrated a portion of another spark-plug in all particulars like the structure of Figs. 1, 2 and 3 except that the rod 21 (which corresponds to the rod 11 of Fig. 1) is not provided with a screw-thread and nut which corresponds to the screw-thread 12 and the nut 13 of Fig. 1, and the inner side of the eccentric electrode 22 (which corresponds to the electrode 14 of Figs. 1 and 2) is disposed to engage directly with the outer face of the insulator 23 (which corresponds to the insulator 10 of Fig. 1), whereby said rod 21 cannot be moved in a lengthwise direction, but it can be rotatively moved to vary the width of the spark-gap between the electrode 22 and the adjacent spark-gap that corresponds with the spark-gap 20 of Fig. 1.

Obviously changes may be made in the forms, dimensions and arrangement of parts of my invention without departing from the spirit thereof.

What I claim is:

A spark plug comprising a metal casing, an insulating tube positioned therein, an apertured insulating disk positioned at each end of the casing, a metal rod passing through said tube and disks, the outer end of the rod being threaded, lock nuts and a check nut mounted on said threaded end, the inner end of said rod being concentrically enlarged and externally threaded, a nut mounted on the threaded portion thereof, an eccentric enlargement constituting an electrode carried by the enlarged threaded end of the rod, the said electrode being movable relative to said casing, and a fixed electrode carried by said casing.

In witness whereof, I hereunto subscribe my name this 11th day of January, A. D., 1916.

EARL H. M. MEYER.

Witnesses:
FRANK WARREN,
O. JOHNSON.