July 3, 1923. 1,460,983

J. C. ROWAN

SPARK PLUG

Filed Sept. 26, 1921

Fig. 1.

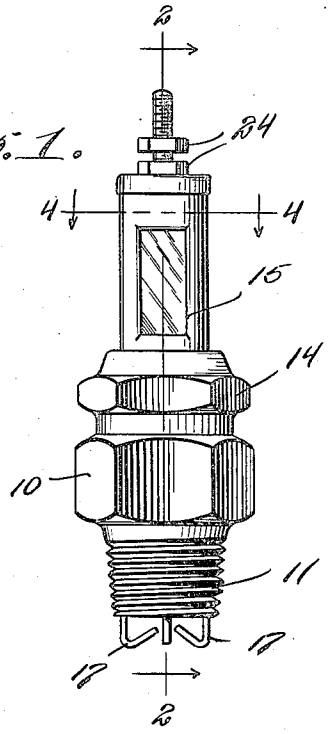


Fig. 2.

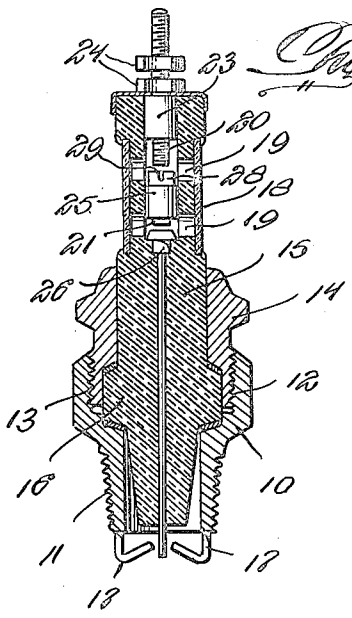


Fig. 3.

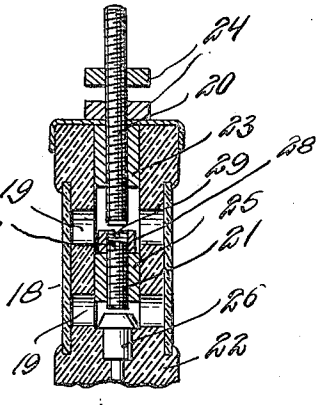
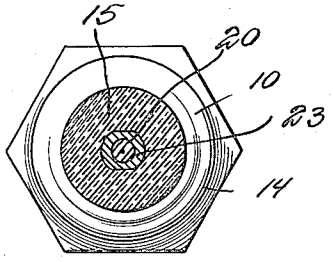


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN C. ROWAN, OF SOUTH ATLANTA, GEORGIA, ASSIGNOR OF ONE-HALF TO WILLIS DOBBS, OF ATLANTA, GEORGIA.

SPARK PLUG.

Application filed September 26, 1921. Serial No. 503,226.

To all whom it may concern:

Be it known that I, JOHN C. ROWAN, a citizen of the United States, residing at South Atlanta, in the county of Fulton and State of Georgia, have invented new and useful Improvements in Spark Plugs, of which the following is a specification.

This invention relates to spark plugs, and aims to provide a plug which is designed to prevent fouling of the same under all the circumstances, affording a very intense spark with a resultant increase of power and general efficiency of the motor, and one which is not in any way effected by a cracked porcelain or the like.

Another object of the invention resides in the provision of a plug designed to provide a plurality of gaps in the length of the main electrode, both of which gaps are adjustable, so that the intensity of the spark can be regulated.

A further object of the invention consists in enclosing the adjustable gaps by a member of transparent material, so that the operation of the plug may be readily viewed through said member, the members being designed and arranged to prevent the escape of gaseous fumes under the hood of the vehicle with which the plug is used.

The nature and advantages of the invention will be better understood when the following detailed description is read in connection with the accompanying drawing, the invention residing in the construction, combination, and arrangement of parts as claimed.

In the drawing forming part of this application, like numerals of reference indicate similar parts in the several views and wherein:—

Figure 1 is a view in elevation of the block constructed in accordance with the invention.

Figure 2 is a sectional view taken on line 2—2 of Figure 1.

Figure 3 is an enlarged fragmentary sectional view, showing the adjustable gaps.

Figure 4 is a sectional view taken on line 4—4 of Figure 1.

Referring to the drawing in detail, 10 indicates the shell of the plug which is constructed in the usual well known manner, but exteriorly threaded as at 11, and having an enlarged upper extremity interiorly threaded as at 12 to accommodate the threaded extremity 13 of the nut 14. The usual insulating bushing 15 is arranged within the body portion of the plug and provided with the circular flange 16 adjacent its lower end in the usual manner. Depending from the shell or body portion 10 are spaced electrodes 17, between which is positioned the adjacent end of the main electrode which is passed longitudinally through the insulating bushing 15. The insulating bushing is reduced adjacent its upper end and has associated therewith a transparent sleeve-like member 18 through which certain working parts of the plug may be readily viewed in a manner to be hereinafter described, the insulating bushing being formed with openings or passages 19 for this purpose.

The main electrode is made up of three sections indicated at 20, 21, and 22 respectively, these sections being arranged end to end and slightly spaced apart to provide a plurality of gaps in the length of the electrode for the purpose of intensifying the spark as will be readily understood. The section 20 is rotated through a bushing 23 which is positioned adjacent the top of the plug, this section of the main electrode projecting above the plug in the usual manner and equipped with nuts 24 for holding the lead wire (not shown) associated therewith. The section 21 of the main electrode is arranged immediately beneath the section 20 and is also threaded in a suitable bushing 25 as clearly illustrated in Figure 3. The ends of the section 21 are spaced from the adjacent ends of the sections 20 and 22, thus providing a plurality of gaps between said sections for the purpose above mentioned. The section 22 is arranged directly beneath the section 21 and has the enlarged upper extremity 26 spaced from the adjacent extremity of the section 21. Manifestly, as the current passes through the main electrode, it is caused to jump the gaps between the respective sections thereof, which produces an intensely hot spark, with a resultant increase in power and general efficiency of the motor. As illustrated in Figure 3, the upper end of the section 21 is provided with a kerf 27 so that a suitable tool may be associated therewith to effect an adjustment of said section, to vary the space or space between the opposed ends of said section and the adjacent ends of the respective sections 20 and 22. By varying

the space between the respective sections of the electrode, the intensity of the spark can be regulated. The section 21 is held against casual movement after being adjusted, by means of a nut 28 which is threaded on the upper end of the section 21 as illustrated in Figure 3. This nut is provided with a kerf 29 to accommodate a suitable tool, so that the nut can be removed from the section 21 to allow the latter to be adjusted as above stated, and subsequent to the adjustment of the section 21, the nut 28 is arranged in the position illustrated in Figure 3. I employ the transparent member 18 so that the operation of the plug can be readily viewed from the exterior thereof, which fact is of material assistance in tracing ignition trouble or the like. The transparent member 18 is associated with the plug in a manner to provide a fluid tight joint therebetween and the insulating bushing 15, which fact prohibits the escape of gaseous vapors under the hood of the vehicle with which the plug is used.

While it is believed that from the foregoing description the nature and advantages of the invention will be readily apparent, I desire to have it understood that I do not limit myself to what is herein shown and described, and that such changes may be resorted to when desired as fall within the scope of what is claimed.

What I claim is:—

A spark plug comprising a shell, an insulating bushing arranged therein, a plurality of ground electrodes depending and converging from said shell, a main electrode passed through said bushing and including a plurality of spaced sections, said sections being arranged end to end and slightly spaced apart to provide a plurality of gaps in the length of the electrode, the upper section being screw threaded its entire length, an interiorly threaded bushing carried by the upper end of the insulating bushing and the threads of which being adapted to engage the threads of the upper section, the lower section being the longest and adapted to pass through the greater portion of said bushing and having its lower end in near contacting engagement with the free ends of the first mentioned electrodes, the intermediate section being screw threaded its entire length, a second interiorly threaded bushing carried by the insulating bushing adjacent the first mentioned interiorly threaded bushing and adapted to have its screw threads engage the screw threads of the intermediate section, a kerf provided on the upper end of the intermediate section and adapted to facilitate the rotation thereof, a kerfed nut surrounding the kerfed end of the intermediate section and adapted to lock said intermediate section in a predetermined position, said insulating bushing being provided with passages aligned with the gaps of the main electrode and a transparent member surrounding said insulating bushing and adapted to cover said passages as and for the purpose specified.

In testimony whereof I affix my signature.

JOHN C. ROWAN.