A. K. ROBERTS.

SPARK PLUG.

APPLICATION FILED APR. 15, 1919.

1,377,854. Patented May 10, 1921.

Fig. 2.

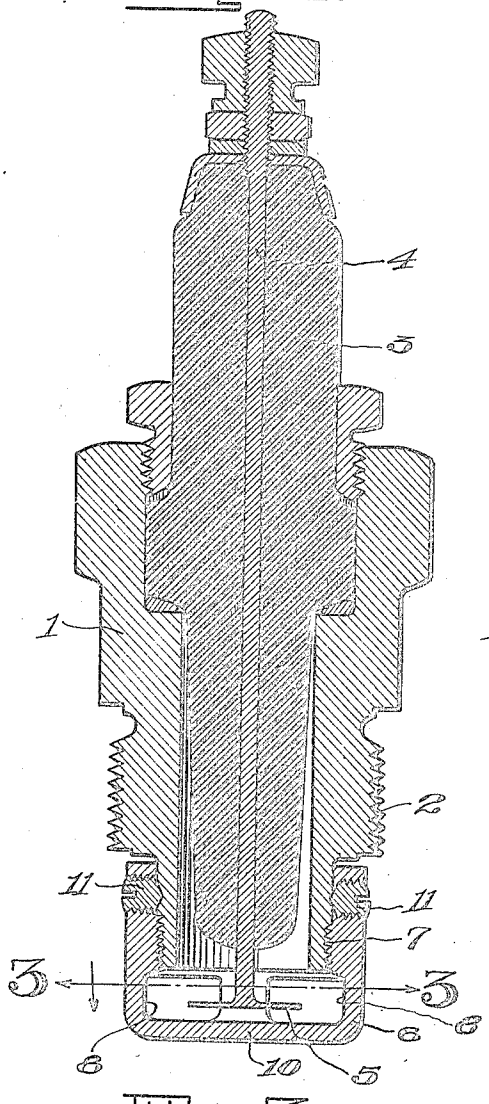


Fig. 1.

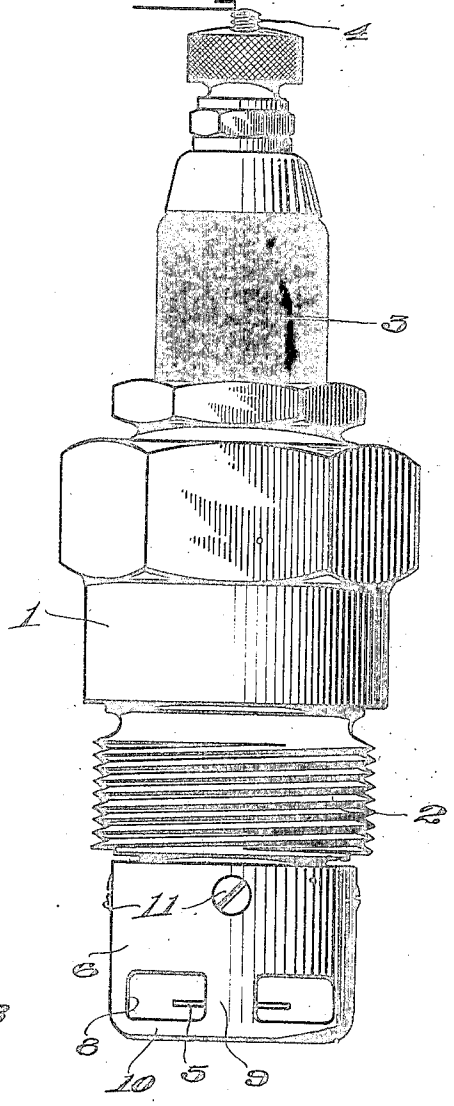
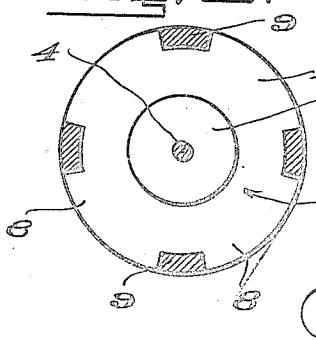


Fig. 3.



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ARTHUR K. ROBERTS, OF QUINCY, MASSACHUSETTS.

SPARK-PLUG.

1,377,854. Specification of Letters Patent. Patented May 10, 1921.

Application filed April 15, 1919. Serial No. 290,127.

To all whom it may concern:

Be it known that I, ARTHUR K. ROBERTS, a citizen of the United States, residing at Quincy, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Spark-Plugs, of which the following is a specification.

This invention relates to spark plugs, such as are used in connection with internal combustion engines, and an object of the invention is to provide a spark plug embodying a relatively stationary electrode, and a movable electrode, which is adjustably connected to the shell of the spark plug for adjusted movement with respect to the stationary electrode for regulating the length of the sparking gap of the plug.

Another object of this invention is to provide means for maintaining the adjustable electrode in adjusted position to prevent movement thereof, with respect to the spark plug, under vibratory movement of the plug which might be occasioned by the operation of the engine or motor in connection with which the spark plug is used.

A still further object of the invention is to provide a spark plug including a pair of flat relatively large sparking points, which are spaced relatively close to each other for creating a broad spark at all times.

Other objects of the invention will appear in the following detailed description taken in connection with the accompanying drawings, forming a part of this specification, and in which drawings:

Figure 1 is a side elevation of the improved spark plug.

Fig. 2 is a longitudinal section through the plug, and

Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 2.

Referring more particularly to the drawings, 1 indicates the metal shell of the spark plug, which is threaded, as shown at 2, for connection with the engine or motor cylinders. The shell 1 carries the usual insulating core 3 of porcelain or analogous insulating material through the center of which the central electrode 4 of the spark plug extends. The upper end of the central electrode 4 may be formed in any approved manner to facilitate the connection of a battery connector and conductor thereto. The lower end of the central electrode 4 has a disk 5 formed thereupon, forming the sparking terminal of the electrode which coacts with the electrode 6 in forming the spark.

The electrode 6 is substantially cup-shaped and is provided with an internal threaded portion 7 adapted for threadable connection with the lower end of the shell 1, to permit of adjustment of the cup-like electrode 6 with respect to the shell and also with respect to the disk terminal 5 of the central electrode 4. The electrode 6 is provided with a plurality of circumferentially spaced openings 8, therein, near its lower end as clearly shown in the drawings, forming a plurality of ribs 9 which are spaced from the disk terminal 5. The openings 8 permit the combustible gas to enter the cup-like electrode 6, about the terminal 5 for igniting it upon the creating of a spark between the terminal 5 of the electrode 4 and the bottom 10 of the cup-like electrode 6.

A plurality of set-screws 11 extend diametrically through the cup-like electrode 6 near its upper edge and the inner ends of these set screws are adapted to bite into the shell 1, for securely connecting the electrode 6 to the shell and prevent adjustment or movement of the electrode 6 with respect to the shell, under vibration of the spark plug, thereby securely locking the sparking point or portion of the electrodes 5 and 6 in adjusted positions.

By providing the disk 5 upon the terminal of the electrode 4, and placing it relatively close to the flat upper surface of the electrode 6, a broad or fat spark will be created at all times, during the operation of the spark plug, owing to the fact that a spark occurring between two flat surfaces in so small a space will necessarily be relatively broad, thereby insuring the proper ignition of fuel about the electrodes and materially decreasing liability of misfiring of the spark plug and fuel.

Changes in details may be made without departing from the spirit of this invention, but;

I claim:

1. In a spark plug, the combination, of a shell, a central electrode extending axially through said shell, a second electrode adjustably carried by the inner end of said shell for adjusted movement toward or from the terminal of said central electrode, a set screw extending through said adjustable

electrode and adapted for biting engagement with said casing to lock said adjustable electrode against movement.

2. In a spark plug, the combination, of a casing, a central electrode extending axially through said casing, a disk terminal formed upon the inner end of said central electrode, an adjustable electrode carried by the inner end of said casing and adapted for adjusted movement toward or from said disk terminal, and a set screw extending through said adjustable electrode and adapted for biting engagement with said shell to lock the adjusted electrode against movement.

3. In a spark plug, the combination, of a shell, a central electrode extending axially through said shell, a disk terminal formed upon the lower end of said electrode, a cup-like electrode adjustably connected to the inner end of said shell, and adapted for adjusted movement with respect to said disk terminal, said cup-like electrode provided with a plurality of circumferentially spaced openings formed in its sides, near its lower end, and a plurality of set screws extending through the sides of said cup-like electrode and adapted to bite into said shell to lock the adjustable electrode in adjusted position.

ARTHUR K. ROBERTS.