J. A. STORMS.

SPARK PLUG.

APPLICATION FILED MAY 24, 1920.

1,360,814.

Patented Nov. 30, 1920.

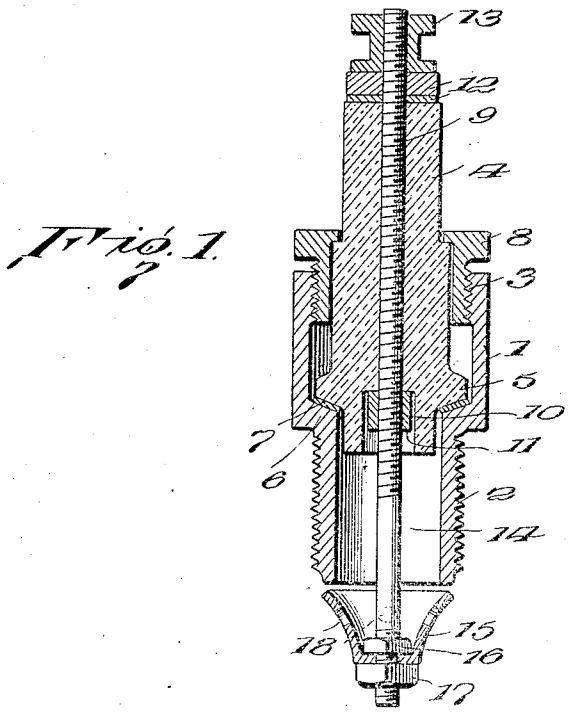


Fig. 1.

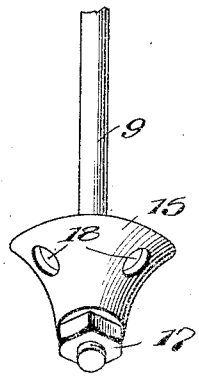


Fig. 3.

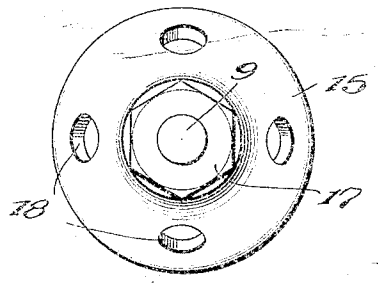


Fig. 2.

Inventor

John A. Storms

By Donald L. Mayson.

Attorney

UNITED STATES PATENT OFFICE.

JOHN A. STORMS, OF NEWARK, NEW JERSEY.

SPARK-PLUG.

1,360,814. Specification of Letters Patent. Patented Nov. 30, 1920.

Application filed May 24, 1920. Serial No. 383,736.

To all whom it may concern:

Be it known that I, JOHN A. STORMS, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Spark-Plugs, of which the following is a specification.

This invention relates to igniting devices for the explosive charges in internal combustion engines, and more particularly to that type of devices generally known as spark plugs.

An object of the invention is to provide a suitable spark plug which will not readily foul, due to the construction and operation of the plug.

Another object is to provide a suitable spark plug which will be highly efficient in use, and which will provide a maximum sparking surface.

Another object is to provide a spark plug with an electrode of Monel metal or the like, which will not corrode or become coated with carbon, due to constant use, etc.

A still further object of the invention is to provide a suitable spark plug which will be so constructed as to contain a large combustion chamber and a cup below said chamber, into which the gasolene is drawn, heated and expanded.

Another object is to provide a plurality of ports circumferentially of the electrode cup and near the upper portion thereof, so that when the charge is ignited, a flame will shoot through the ports with enough force to keep the top of the piston free from carbon, and whatever carbon might have collected will be carried off by the exhaust.

Other objects will appear as the description proceeds.

Figure 1 is a vertical sectional view of my improved spark plug;

Fig. 2 is a perspective view of the Monel metal electrode, and

Fig. 3 is an enlarged bottom view of the electrode, showing the inlet ports or openings therein.

Like characters of reference are used throughout the following specification to designate corresponding parts.

The spark plug casing 1, is provided with the usual threaded portion 2, and has its upper portion internally threaded, as at 3. The insulator 4 is provided with an enlarged shoulder 5 which extends circumferentially thereof, and near its bottom portion. The interior of the casing 1, is provided with an annular seat 6, upon which the washer 7 is positioned. The shoulder 5 of the insulator 4 engages the washer 7 and is held in operative position by the bushing 8, which engages and coöperates with the internally threaded portion 3 of the casing 1.

A threaded conductor rod or binding post stem 9 passes through the insulator 4, and is held in rigid position by means of the nut 10 seating in the socket 11 in the insulator, and the washers 12 and nut or binding post terminal 13 at its upper end.

It will be noticed that the lower portion of the casing 1, is constructed so as to provide a large and unobstructed combustion chamber 14 for the vaporized gasolene.

It will be further noted that the lower end of the binding post stem or conductor rod 9 is threaded, and carries a cup shape electrode 15 of Monel metal, and is adjustable thereon by means of the nuts 16 and 17. A plurality of ports or openings 18 are disposed or formed in the electrode 15, and near the upper portion thereof.

As before mentioned the electrode is made of Monel metal, which will not corrode, neither will it become coated with carbon. It also has the tendency of quickly heating, and when once heated will retain the heat at a very high temperature.

The object of the ports or openings, is to permit the partly vaporized gasolene to rush through these openings, and settle into the bottom of the cup shaped electrode, where the charge will be heated by coming in contact with the heated metal walls thereof, and consequently expand and pass up into the combustion chamber. The spark will now take place between the edges of the cup and the bottom of the casing, setting fire to the charge, which will be blown down through the openings into the cylinder, thereby setting fire or igniting the charge which has been compressed in the cylinder.

While the bottom of the electrode is hot, the upper portion or sparking surface will be kept approximately cool, inasmuch as there is the continuous rushing back and forth of the charge, and also preignition will be prevented.

The blowing of the flames through the ports in the electrode, will prevent the sparking points or surface from becoming covered with carbon.

With this type of spark plug, there will

be a great saving of gasolene, inasmuch as there may be a very lean mixture employed.

While I have described certain specific features, it will be understood that many minor changes in detail of construction may be resorted to without departure from the spirit of the invention.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is:—

1. A spark plug comprising a casing, an insulator within said casing, a conductor or binding post stem extending through said insulator, a cup-shaped electrode attached to said conductor and having a spheroidal bottom, said electrode being provided with a plurality of intake ports above its bottom, substantially as described.

2. A spark plug comprising a casing, an insulator within said casing, a conducting stem passing through said insulator, a cup-shaped electrode adjustably attached to said conductor, said electrode being provided with intake ports above its bottom, substantially as described.

3. A spark plug comprising a casing, an insulator within said casing, a combustion chamber in the lower portion of said casing, a conducting stem passing through said insulator, a cup shaped Monel metal electrode adjustably attached to said stem, said electrode having a plurality of intake ports through its wall and adjacent the top thereof, thereby forming a collecting and heating cup, substantially as described.

In testimony whereof I affix my signature.

JOHN A. STORMS.