W. M. ELLIS.

SPARK PLUG.

APPLICATION FILED JAN. 10, 1920.

1,385,529. **Patented July 26, 1921.**

Fig. 1.

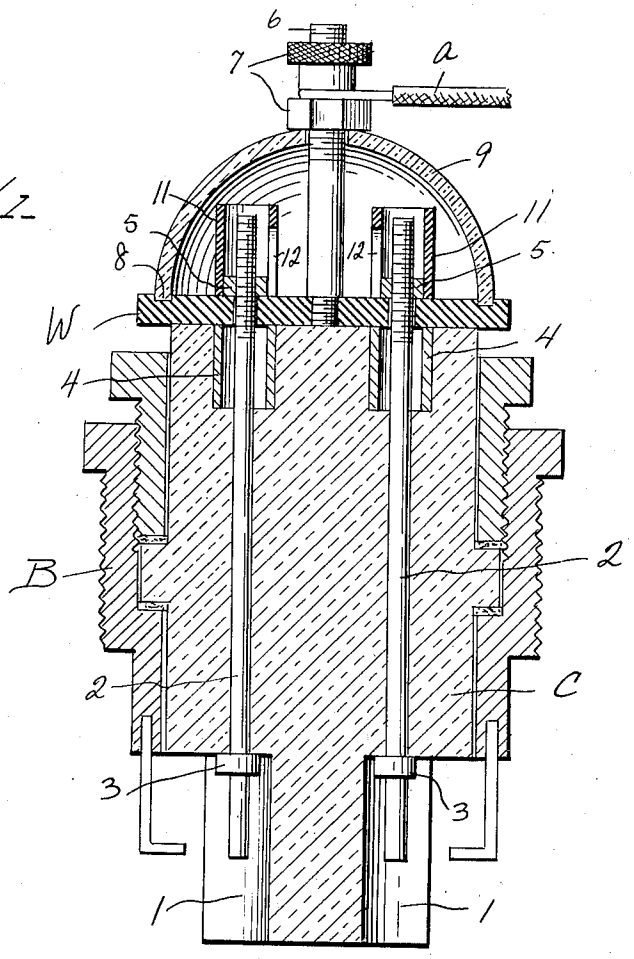


Fig. 2.

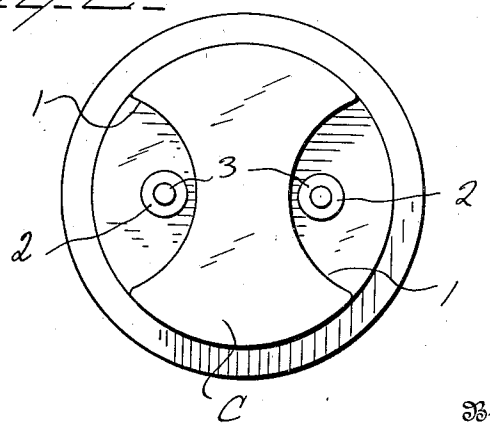
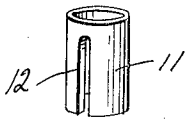


Fig. 3.



Inventor

W. M. Ellis

By Watson E. Coleman

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM M. ELLIS, OF KENTON, OHIO.

SPARK-PLUG.

1,385,529. Specification of Letters Patent. Patented July 26, 1921.

Application filed January 10, 1920. Serial No. 350,657.

To all whom it may concern:

Be it known that I, WILLIAM M. ELLIS, a citizen of the United States, residing at Kenton, in the county of Hardin and State of Ohio, have invented certain new and useful Improvements in Spark-Plugs, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain improvements in spark plugs, and it is an object of the invention to provide a novel and improved device of this general character wherein an intensified spark is assured at the firing end of the plug and whereby it may be readily determined whether or not the plug is sparking.

Another object of the invention is to provide a novel and improved device of this general character wherein a plurality of sparks may be obtained at the firing end of the plug, together with means for reducing the number of such sparks at the firing end of the plug as may be required.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved spark plug whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a view partly in section and partly in elevation of a spark plug constructed in accordance with an embodiment of my invention.

Fig. 2 is a view of the firing end portion of the core as comprised in the plug as herein disclosed; and

Fig. 3 is a view in perspective of one of the insulating sleeves herein embodied.

As disclosed in the accompanying drawings, B denotes a body or shell of conductive material of any ordinary or preferred type and through which is disposed in a well known manner the core C of porcelain or other suitable material. The firing end portion of the core C is provided with the substantially diametrically opposed recesses 1, preferably substantially concave in cross section. Loosely extending through the core C longitudinally thereof are the conductor wires 2 having their firing ends extending within the recesses 1 hereinbefore referred to. Each of said wires adjacent its firing end is provided with a shoulder 3 adapted to contact with the upper or outer end wall of the recess 1 in a manner to be hereinafter referred to. The opposite end portion of the conductor wire 2 is surrounded by a sleeve 4, preferably of brass, embedded within the core C with the outer face of said sleeve 4 substantially flush with the adjacent end of the core C.

Overlying the outer end of the core C is a washer W of insulated material and through which the conductor wires 2 also extend. Threaded upon said end portion of each of the conductor wires 2 is a nut 5 which tightens down upon the washer W to draw the coacting conductor wire 2 through the core C with the shoulder 3 thereof in contact with the end wall of the recess 1 as hereinbefore referred to.

Suitably engaged with substantially the axial center of the washer W and between the adjacent end portions of the conductor wire 2 is a post 6 of metal and which has engaged therewith the nuts 7 to provide means whereby a conductor *a* leading from a coil or the like may be electrically connected with said post.

The outer face of the washer W is provided with an annular groove 8 substantially concentric to the post 6 and which is adapted to receive the marginal edge of a concavo-convex cover 9, preferably of glass, and through the axial center of which the post 6 is also disposed. The inner nut 7 engages the cover 9 and operates to clamp the cover in applied position. The cover 9 serves to protect the adjacent terminals of the conductor wires 1 and the nuts 5 thereon against water, dirt, or the like and which would otherwise tend to interfere with the proper gapping between said terminals of the wires 2 or the nuts 5 and the post 6. It is also preferred that the inner nut 7 be knurled and the outer or second nut 7 be of hexagon type.

I also find it of advantage to surround each of the nuts 5 with a sleeve 11 of insulating material and which sleeve has provided in its wall a slot 12. With the sleeve 11 properly adjusted with the slot 12 substantially opposed to the post 6, gapping of

the current from said nut 5 and the post 6 will occur. Upon properly rotating the sleeve 11, this gapping can be prevented. By this means it will be conceived that in accordance with the requirements of practice, either or both of the conductor wires 2 may be caused to spark at the firing end of the plug.

From the foregoing description, it is thought to be obvious that a spark plug constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof, and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:—

1. A spark plug including a core, a conductor wire disposed through the core, a post carried by the core and adapted to be connected with a source of electrical energy, said post being to one side of an end portion of the conductor wire, and means for insulating, at will, the conductor wire from the post.

2. A spark plug including a core, a conductor wire disposed through the core, a post carried by the core and adapted to be connected with a source of electrical energy, said post being to one side of an end portion of the conductor wire, and a sleeve of insulating material surrounding the end portion of the conductor wire adjacent the post, said sleeve being provided in its wall with a slot.

3. A spark plug including a core provided at one end with substantially diametrically opposed recesses in its side faces, conductor wires disposed through the core and extending within the recesses, a post extending outwardly from the opposite end of the core at a point between the conductor wires and spaced therefrom, said faces being adapted to be connected to a source of electrical energy, and means for insulating, at will, either of the conductor wires with the respect to the post.

4. A spark plug including a core, a conductor wire disposed through the core, a post carried by the core and adapted to be connected with a source of electrical energy, said post being spaced from the conductor wire, and means for insulating said post and wire, at will, one from the other.

5. A spark plug including a core, a conductor wire disposed through the core, a post carried by the core and adapted to be connected with a source of electrical energy, said post being spaced from the conductor wire, and means for insulating said post and wire one from the other.

In testimony whereof I hereunto affix my signature.

WILLIAM M. ELLIS.