July 15, 1924. 1,501,368

J. W. POWELL

SPARK PLUG

Filed June 6, 1921

Fig. 1.

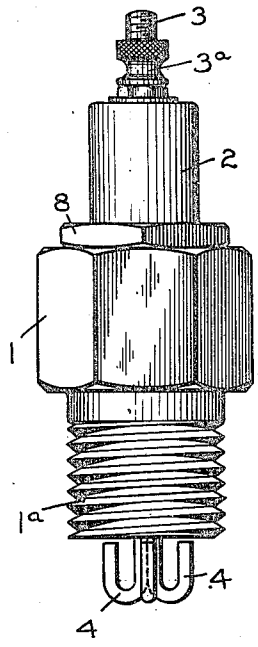


Fig. 2.

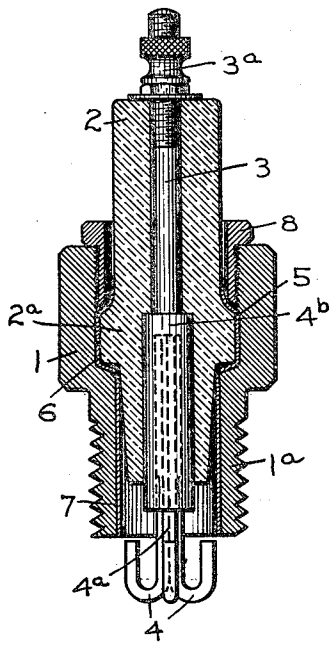
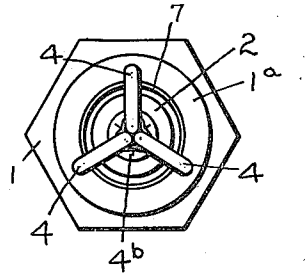


Fig. 3.



James W. Powell Inventor:

By Alexander & Powell

His Attorneys

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UNITED STATES PATENT OFFICE.

JAMES W. POWELL, OF ANACONDA, MONTANA.

SPARK PLUG.

Application filed June 6, 1921. Serial No. 475,303.

To all whom it may concern:

Be it known that I, JAMES W. POWELL, a citizen of the United States, residing at Anaconda, in the county of Deerlodge and State of Montana, have invented certain new and useful Improvements in Spark Plugs; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in spark plugs. Its object is to provide a spark plug having three firing points firing from the base or bottom of the plug; and in which when in action there will always be one point firing.

I will explain the invention with reference to the accompanying drawings which illustrate a plug embodying the same; and summarize in the claims the novel features of construction and novel combination of parts for which protection is desired.

In said drawings:

Fig. 1 is a side view of the complete plug.

Fig. 2 is a vertical longitudinal section through such plug.

Fig. 3 is a bottom end view thereof.

The plug casing as shown is of the usual form having a rectangular body portion 1 and a lower threaded portion 1^a whereby the plug may be secured in position. Extending into this body 1 is the usual non-conducting sleeve 2 formed of suitable refractory insulating material. This sleeve is secured in the body by a threaded annulus 8 engaging an internally threaded socket in the upper end of the body as usual. A soft copper or soft metal gasket 5 may be interposed between the inner end of the annulus 8 and the annular flange 2^a on sleeve 2; and a similar gasket 6 may be interposed between flange 8^a and the bottom of the socket; as shown in Fig. 2.

Extending through the sleeve 2 is a suitable metal rod 3 the upper end of which is threaded and the usual devices indicated at 3^a are provided for attaching a wire or electrical conductor thereto.

To the lower end of this stem 3 are attached three electrodes or contact points 4. Each electrode is J-shaped. The shanks thereof are secured to the member 3 by a copper sleeve 4^b. The hook or terminal ends of these electrodes are arranged preferably on equidistant radial lines and the extremities of these electrodes (which form the sparking or firing points) are closely adjacent the lower or inner end of the portion 1^a of the casing 1 so that spark gaps are formed between the outer ends of the electrodes 4 and the end of the body 1^a.

To facilitate bridging of the gaps by the electric sparks the threaded portion 1^a of the casing is lined with an interior metal sleeve 7 of high conductivity, such as copper, and the sparks pass freely between the edge of this copper sleeve and the extremities of the electrodes 4.

The peculiar arrangement of the electrodes and the copper lining renders the plug more sensitive, more durable and more serviceable. The lining 7 can be inserted by pressure into the casing and the electrodes can be welded to the stem, and after their points are properly adjusted relatively to the shell the electrodes should be fixed in place in the casing so that they cannot be casually disarranged or jarred out of position. The three electrodes being made of copper, and the body having a copper lining it will at all times keep clean; and the copper lining and electrodes will not corrode or carbonize; and the construction shown and described makes a superior spark plug.

What I claim is:

1. The herein described spark plug comprising a metal body having a reduced externally threaded lower portion, and a socket in its upper end internally threaded; a sleeve of non-conducting material having its upper portion entered in said socket and projecting above the body and having a lower end portion reduced and projecting below the socket; an annular nut confining the sleeve in the socket; a copper lining pressed within the body below the socket; a rod extending axially through the sleeve and provided on its upper end with means for attaching a conductor thereto; and a plurality of copper electrodes having their shanks assembled parallel with and connected to the lower end of the rod by means of a copper sleeve and having their lower ends diverging radially outward and curved upwardly and terminating near the lower edge of the copper lining in the lower end of the body, said copper lining, copper sleeve, and copper electrodes preventing corrosion and carbonizing of the firing points and adjacent parts of said plug.

2. The herein described spark plug comprising a metal body having a reduced externally threaded lower portion, and a socket in its upper end internally threaded; a sleeve of non-conducting material having its upper portion entered in said socket and projecting above the body and having a lower end portion reduced and projecting below the socket; an annular nut confining the sleeve in the socket; metal gaskets interposed between the annular nut and the shoulder on the sleeve, and between the shoulder on the sleeve and the bottom of the socket; a copper lining pressed within the body below the socket; a rod extending axially through the sleeve and provided on its upper end with means for attaching a conductor thereto; and a plurality of copper electrodes having their shanks assembled parallel with and connected to the lower end of the rod by means of a copper sleeve, and having their lower ends diverging radially outward and curved upwardly and terminating near the lower edge of the copper lining in the lower end of the body, the lower extremities of the electrodes and the lower end of the plug comprising the firing points of the plug; and the copper lining, copper sleeve, and copper electrodes preventing corrosion and carbonizing of the firing points and adjacent parts of the plug.

In testimony that I claim the foregoing as my own, I affix my signature.

JAMES W. POWELL.