J. E. POWELL.

SPARK PLUG.

APPLICATION FILED JAN. 15, 1919.

1,319,487. Patented Oct. 21, 1919.

Fig. 1.

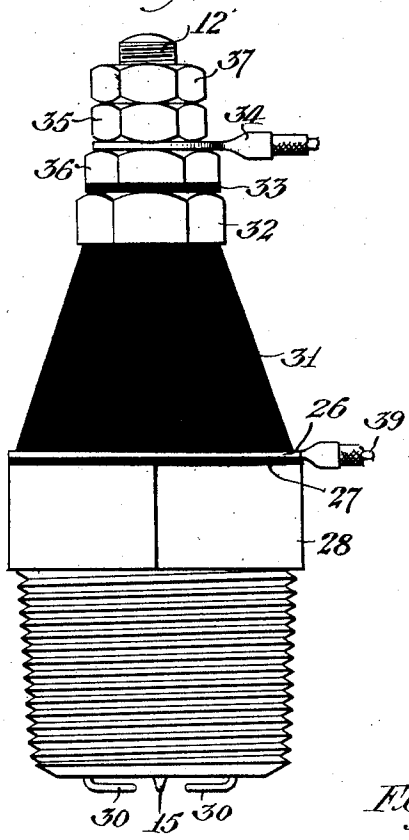


Fig. 2.

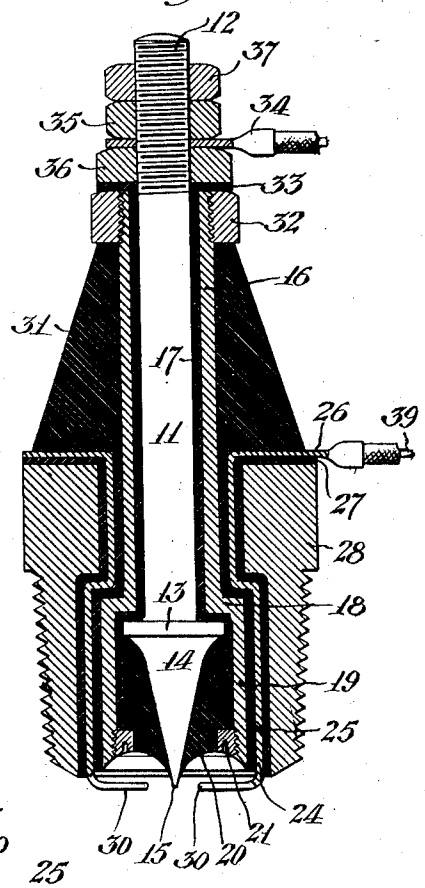
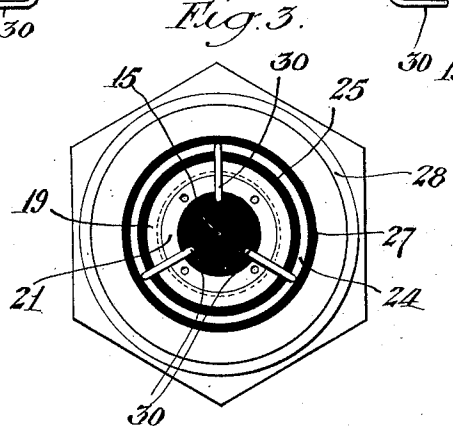


Fig. 3.



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UNITED STATES PATENT OFFICE.

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SPARK-PLUG.

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Application filed January 15, 1919. Serial No. 271,325.

To all whom it may concern:

Be it known that I, JESSE EDWARD POWELL, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Spark-Plug, of which the following is a specification.

My invention relates to spark plugs of the type used for producing a spark in internal combustion engines. Ordinarily spark plugs are constructed to have one terminal connected to a battery or electric generative mechanism, the other terminal being connected or grounded to the engine, and one of the principal objects of my invention is to produce a spark plug of the type described, of simple form and construction, provided with a single discharge or inner point and a plurality of receiving or outer points.

Another object of my invention is to produce a spark plug of the character described, of simple form and construction, which is arranged to insulate the electrical current passing through the plug from the engine in which the same is used.

Other objects and advantages will appear hereinafter from the following specification.

Referring to the drawings which are for illustrative purposes only,—

Figure 1 is a side elevation of a spark plug embodying a form of my invention.

Fig. 2 is a vertical sectional view of the plug shown in Fig. 1.

Fig. 3 is an inverted plan view of the plug.

11 designates a copper rod or core, the upper end of which is threaded as indicated at 12, the rod 11 near its lower end having formed thereon a circular flange 13 which terminates in a downwardly extending conical end 14 which in turn terminates in the discharge point 15. 16 designates a brass sleeve or spool which surrounds the rod 11, being spaced apart therefrom and insulated from the rod by means of suitable insulation 17, the spool being provided with a shouldered portion 18 and an enlarged lower end or head 19 to receive a block of insulation 20 which fits about the conical lower end 14 of the rod, such block 20 of insulation being held in place by a nut 21 which engages the interiorly threaded lower end of the head 19.

The receiving terminal of the plug consists of a thin copper sleeve 24 which is spaced apart from the spool 16 by a layer of insulation 25, the sleeve 24 and insulation 25 following in outline the shape of the spool 16 with the exception that the upper end of the sleeve 24 is flattened and extends outwardly in a flange as indicated at 26, the sleeve 24 being insulated by a sheet of insulation 27 from a screw plug 28 which is exteriorly threaded to engage the spark plug opening in the engine. The lower end of the sleeve 24 is provided with inwardly extending points 30 arranged to receive a spark from the point 15. Above the outwardly flanged end 26 of the sleeve 24 is a block of insulation 31 held firmly in place by a nut 32 threaded to engage the upper end of the spool 16, the insulation 17 extending outwardly over the nut 32 as indicated at 33.

Electrical connection is made to the rod 11 by means of a wire 34 which it is understood is connected to any suitable source of electricity such as a battery, the wire 34 being connected to the rod 11 between suitable nuts 35 and 36, a lock nut 37 being provided as shown in Figs. 1 and 2. The opposite electrical connection is made by a wire 39 which is connected in any suitable manner to the sleeve 24, the wire 39 being connected if desired to the negative side of the battery in which case the electrical energy passing through the spark plug is not discharged into the body of the engine thereby permitting the use of a weaker battery.

By using a plurality of outer points 30 the failure to spark common in plugs having a single outer point is overcome for the reason that should one of the outer points become damaged or dirty one of the remaining points would receive the spark. The brass spool 16 not only provides means for holding the block of insulation 31 in place, but the shouldered portion 18 receives the shock of the explosion in the engine, this shoulder also forms an abutment against which the flange 13 of the rod 11 acts when the nut 36 is tightened.

What I claim as my invention is:—

1. A spark plug comprising a hollow screw plug, a metal electric conducting sleeve in said plug, insulation between said plug and sleeve, outer points formed on said sleeve extending inwardly therefrom, forming the receiving points of spark gap, a metal spool within said sleeve, insulation between said spool and sleeve, a metal electric conducting rod in said spool, insulation between said rod and spool, a point formed on the lower end of said rod extending within said points

on the sleeve, and tightening means on the upper end of said rod coacting with said spool to hold the rod therein.

2. A spark plug comprising a hollow screw plug, a metal electric conducting sleeve within said plug, inwardly extending points on the lower end of said sleeve forming receiving points of spark gap, a circular flange on said sleeve extending outwardly over the upper end of said plug, a wire conductor connected to said sleeve, means for insulating said plug from the sleeve, a metal spool within said sleeve, a shoulder formed on said spool, insulating material between said spool and sleeve, a nut on the upper end of said spool, a block of insulating material on said spool between said nut and the flange on said sleeve, a metal electric conducting rod within said spool terminating at its lower end in a point within the points on said sleeve, a circular flange on said rod below the shoulder on said spool, insulating material between said rod and spool, and connection nuts on the upper end of said rod insulated from said spool and nut thereon.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 8th day of January, 1919.

JESSE EDWARD POWELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."