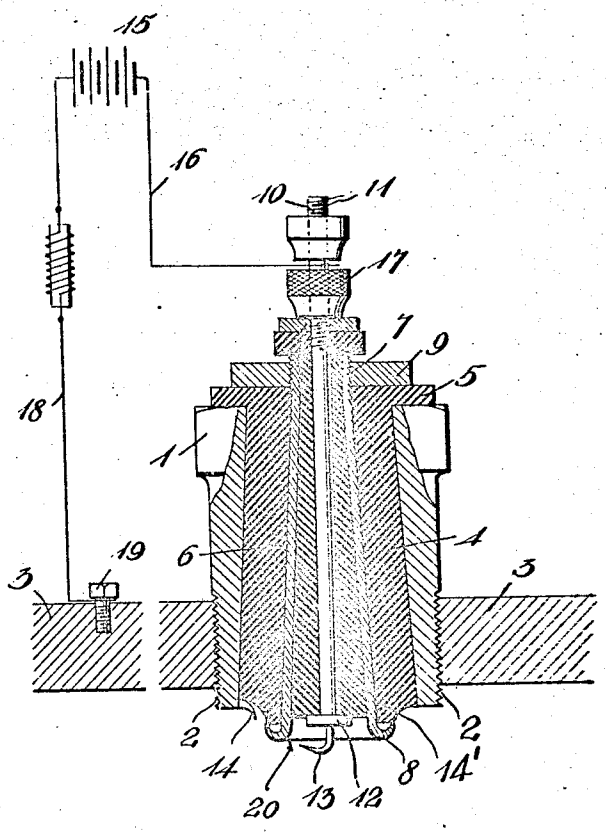
No. 895,030. PATENTED AUG. 4, 1908.

J. LANG.

SPARK PLUG.

APPLICATION FILED NOV. 25, 1907.



Witnesses

C. H. Griesbauer.

Inventor

James Lang

By D. B. Williamson & Co

Attorneys

UNITED STATES PATENT OFFICE.

JAMES LANG, OF CAVALIER, NORTH DAKOTA.

SPARK-PLUG.

No. 895,030. Specification of Letters Patent. Patented Aug. 4, 1908.

Application filed November 25, 1907. Serial No. 403,774.

To all whom it may concern:

Be it known that I, JAMES LANG, a citizen of the United States, residing at Cavalier, in the county of Pembina and State of North Dakota, have invented certain new and useful Improvements in Spark-Plugs; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has relation to new and useful improvements in spark plugs.

The principal object of the invention is to provide a simple and efficiently operating device of this kind capable of producing both a first and second spark, the second spark being of greater intensity and volume than the first and consequently increasing the efficiency of any internal combustion engine employing a jump spark coil wherein it is employed.

With the foregoing and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings: The figure is a central longitudinal sectional view of the invention, represented as being applied to one wall of the combustion chamber of an internal combustion engine.

Referring more particularly to the drawings which are for illustrative purposes only, and therefore are not drawn to scale, the numeral 1 indicates an outer tubular casing or member, having a screw thread 2 at its inner end adapted for screwed engagement with either of the walls 3 of the combustion chamber of an engine. The bore of said casing is preferably decreasingly tapered from its inner end and closely fitted in said bore, is a correspondingly tapered sleeve 4 of suitable insulating material. Said sleeve is formed at its outer end with an annular outstanding flange 5 for engaging with the outer end of the casing 1 to maintain it against inward displacement, and with a central bore preferably tapered to correspond with the taper of the bore of the outer casing.

In carrying out the invention, a tube 6, is closely fitted in the bore of member 5, its outer end being screw threaded as at 7 and projecting beyond the adjacent end of member 5 and its inner or opposite end projecting inwardly beyond the inner end of the outer casing 1 and being bent outwardly to form an annular flange 8. To maintain said plug against inward displacement a fastening nut 9 is screwed on its outer threaded end against the outer or flanged end of member 5. A centrally disposed conducting rod or core 10 is arranged to extend longitudinally through the tube 6, the outer end of said rod or core projecting some little distance beyond the adjacent end of the member 5 and being screw threaded as at 11 and the inner or opposite end of the same being formed with an annular flange or shoulder 12 having an outwardly extending laterally bent finger or extension formed on its outer face, the purpose of which will be disclosed.

Formed on the inner face and end of the outer tubular casing or member 1, and spaced a suitable distance from the shoulder of the tube 6 is an inwardly extending finger or extension 14.

A sleeve 14′ of rubber or other suitable insulating material is arranged in the tube 6 around the body of the conducting rod or core 10, the inner end of the sleeve resting on the flange or shoulder 12, formed at the inner end of said rod or core.

In practice, the current is derived from a series of batteries 15 or other source of electrical energy, the positive or feed wire 16 leading therefrom being electrically connected with the outer threaded end of the core 10 by a thumb-nut 17 and the negative or return wire 18 being electrically connected with the wall 3 by a contact screw 19.

In the operation of the invention the current passes or travels along the core 10 until it reaches the finger or extension 13 formed at the inner end thereof from which point it jumps across the air gap 20 to the flange 8 of the tube 6, producing the first spark, and thence from said flange to the extension 14 producing the second spark. This method of simultaneously producing first and second sparks is a particular feature of the invention, as the second spark will be of greater intensity and volume than the first and the compressed gases in the combustion chamber are more readily ignited and as a result the efficiency of the engine materially increased.

Having thus described the nature of my invention, what I claim as new and desire to secure by Letters-Patent, is:

1. A spark plug of the character specified, comprising an outer casing, formed at its

inner end with a laterally extending finger, a central tube arranged within the casing, the outer end of the tube being screw threaded and projecting beyond the outer end of the casing, a fastening nut screwing upon the projecting end of the tube to retain the same in position, a sleeve of insulating material arranged between the casing and tube, the outer end of the sleeve being formed with an out-turned flange to engage the adjacent end of the casing, a central conducting core extending longitudinally through the plug, the inner end of the core being formed with a laterally extending finger, a sleeve of insulating material arranged between the conducting core and tube, and electrical connections for connecting the spark plug with a source of energy.

2. A spark plug of the character specified comprising an outer casing formed at its inner end with a laterally extending finger, a central tube extending longitudinally through the casing, the inner end of the tube being formed with an out-turned annular flange, a sleeve of insulating material arranged between the casing and tube, the outer end of the sleeve being formed with an out-turned flange to bear upon the adjacent end of the casing and the inner end of the sleeve bearing upon the tube flange, a conducting core extending longitudinally through the tube, the inner end of the core being formed with a laterally extending finger, a sleeve of insulating material arranged between the conducting core and tube, and connections for connecting the spark plug with a source of energy.

3. A spark plug of the character specified comprising an outer casing formed at its inner end with a laterally extending finger, a central tube arranged within the casing, the inner end of the tube being formed with an out-turned annular flange, a sleeve of insulating material arranged between the casing and tube, the inner end of the sleeve bearing upon the flange of the tube and the outer end of the sleeve being formed with an out-turned flange to bear upon the casing, a sleeve of insulating material arranged in the tube, and a central conducting core extending through the sleeve, the inner end of the core being formed with a flange to support the sleeve in position, and with a laterally extending finger beyond the flange.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JAMES LANG.

Witnesses:
W. H. OTTEN,
D. J. LAXDAL.