

1,354,924.

W. M. SUBLETTE.
SPARK PLUG.
APPLICATION FILED JAN. 13, 1919.

Patented Oct. 5, 1920.

Fig. 1.

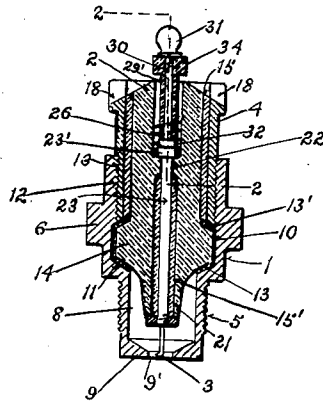


Fig. 3.

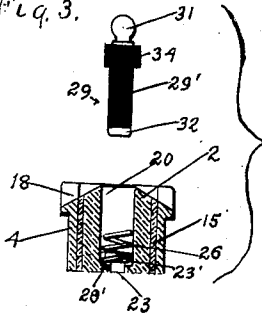
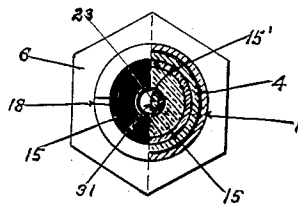


Fig. 2.



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SPARK-PLUG.

1,354,924.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM M. SUBLETTE, 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.

This invention relates to spark plugs for internal combustion engines, and the main object of the invention is to provide a spark plug which will be substantially protected from breakage or other damage by rough handling or by accidental impact of tools or other objects therewith.

The accompanying drawings illustrate an embodiment of my invention, and referring thereto:

Figure 1 is a vertical section of the plug.

Fig. 2 is a plan view partly in horizontal section on line 2—2 in Fig. 1.

Fig. 3 is a fragmentary section of the upper part of the plug, showing the connecting device separate therefrom.

The spark plug comprises an outer body 1, of metal, and insulator body 2, mounted within said outer body and supporting the point 3 for the spark gap, and a casing 4 inclosing said insulator body 2 to protect and retain the same in position, and formed as a metal sleeve.

The outer body 1 is provided with screw means 5 for screwing into the cylinder wall to hold the spark plug in position, and with wrench hold 6 to enable it to be turned by a suitable tool. At its inner end the body 1 is formed with a cylindrical chamber 8 having an internal flange 9 which forms the grounded member for the spark gap, the point 3 extending within the opening 9' formed by said flange. Outwardly from the chamber 8, the body 1 is formed with a tubular portion 10 of larger diameter than chamber 8, so as to form a shoulder 11, and this enlarged portion of the body 1 is screw-threaded at 12 to receive and engage the screw thread 13 on casing or sleeve 4.

Insulator body 2 is preferably of porcelain or similar material, and is provided with an annular flange 14, which is clamped between shoulder 11, and the inner end of sleeve 4, suitable packing and cushioning means such as insulating washers 13 and 13' (of asbestos reinforced with copper in well known manner, or of other suitable material) being interposed between said flanges

and the abutting parts. Insulator body 2 has a portion extending outwardly from flange 14 and surrounded by casing 4, and a portion extending inwardly from said flange. The outer end of insulator body 2 is preferably tapered or inclined so as to shed water, and the sleeve or casing 4, which surrounds and preferably extends somewhat beyond the outer end of the insulator may be channeled at 18 to draw off any water that may leak on to the plug. An insulating sleeve or tube 15 of mica or other comparatively non-frangible insulating material, is interposed between sleeve or casing 4 and insulator body 2.

Insulator body 2 is provided with a recess 20 at its upper end, with a cylindrical chamber 21 at its inner end with a contracted opening 22 between recess 20 and chamber 21, forming a shoulder 20' at the inner end of recess 20. A metal screw 23 engages by its head 23' with the shoulder 20' and extends axially through opening 22 and chamber 21 and carries the spark plug point 3 at its lower end, a nut 25 on said screw engaging the lower end of insulator body 2 to retain the screw in position. A helical spring 26 has one end secured under the head 23' and extends upwardly within recess 20 to receive and hold a cylindrical connecting device 29. Said connecting device comprises a cylindrical body 29' of hard rubber or other insulating material of smaller diameter than the recess 20, so as to permit of lateral displacement of device 29 within said recess and a metal screw 30 extending axially in said body and fastened thereto by nut 31 and head 32. Said connecting device is placed in position by inserting it within the helical spring 26, turning it at the same time so as to tend to expand the spring laterally, and the spring then gripping the device and making metallic connection between the same and the screw 23, while giving sufficiently resilient support to the connecting device to prevent undue strain on the insulator body 2 when said device is accidentally displaced laterally.

The outer casing or sleeve 4 being of metal protects the relatively frangible insulator body 2, but even if the latter be cracked, it will still be retained in position by inclosing parts 1 and 4, and the insulation would still be effective on account of the relatively non-frangible insulating sleeve 15 and washers

13' and 13'. A mica or similar sleeve 15' is preferably provided between the metal screw or member 23 and the wall chamber 21, to further safeguard against jumping of the sparking current between the members 5 21 and 1 in case of breakage of the insulator body 2 between these parts, the sleeve 15' and 15 preferably overlapping so as to insure protection of the insulation.

10 The connecting device sleeve or body 29' may have an enlargement 34 extending over the insulator body to assist in shedding water therefrom.

What I claim is:

15 1. A spark plug comprising a metal body having a shoulder, a casing screwing into said body, a porcelain insulator body having a flange secured between said shoulder and the inner end of said casing and having 20 portions extending respectively outward and inward from said flange, a sleeve of relatively non-frangible insulating material surrounding said outward extension of said porcelain insulator body and surrounded by 25 said casing, a metallic member extending axially in said porcelain insulator body and formed at its inner end to cooperate with a

part of the first named metal body to provide a spark gap, and a sleeve of relatively non-frangible material within said inwardly 30 extending portion of said porcelain body and surrounding said metallic member.

2. A construction as set forth in claim 1, in which the said sleeves of relatively non-frangible material overlap each other for 35 the purpose set forth.

3. The combination with a spark plug insulator member having a recess, a metal member mounted in said recess and extending through said insulator and carrying a 40 spark point at its inner end, and a connecting device seated in said recess and having an insulating body portion, provided with an enlargement projecting over the first 45 named insulator body and with a metal portion having a detachable connection with the first named metal member and extending to the outside of the recess for connection to an electrical circuit.

In testimony whereof I have hereunto 50 subscribed my name this 3d day of January 1919.

WILLIAM M. SUBLETTE.