

F. HACHMANN.
SPARK PLUG.
APPLICATION FILED APR. 19, 1919.

1,361,327.

Patented Dec. 7, 1920.

Fig. 1

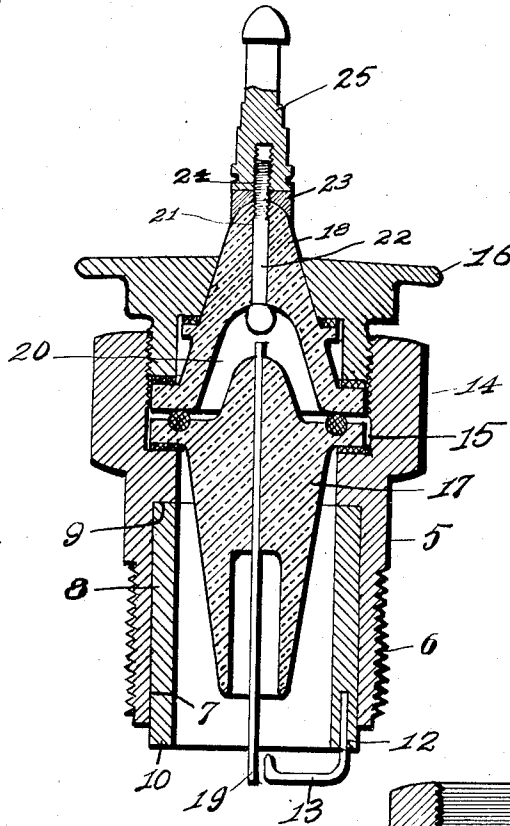


Fig. 3

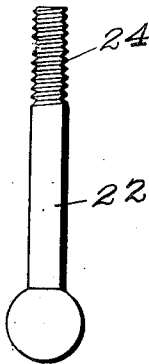


Fig. 2

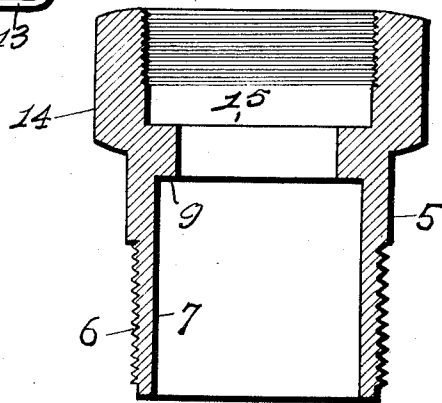
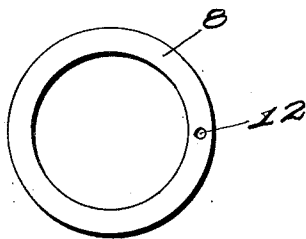


Fig. 4



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UNITED STATES PATENT OFFICE.

FREDERICK HACHMANN, OF ST. LOUIS, MISSOURI, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF THREE-EIGHTHS TO DAVID M. HUTCHINSON, OF FERGUSON, MISSOURI, ONE-SIXTEENTH TO CHAUNCEY R. WATSON, ONE-SIXTEENTH TO PHILIP E. MOODY, ONE-SIXTEENTH TO ELIJAH E. FRASER, ALL OF DETROIT, MICHIGAN, AND ONE-FOURTH TO HERMAN C. STIFEL, OF ST. LOUIS, MISSOURI.

SPARK-PLUG.

1,361,327.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FREDERICK HACHMANN, a citizen of the United States, and resident of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Spark-Plugs, of which the following is a specification, containing a full, clear, and exact description, reference being had to accompanying drawings, forming a part hereof.

This invention relates to certain new and useful improvements in spark plugs and has for its primary object a spark plug wherein the grounded electrode is secured in an aluminium sleeve, thus preventing the accumulation of carbon on the spark plug, it being a well known fact that aluminium has a higher specific heat than iron or steel, hence will retain its heat longer and by being subjected to successive explosions in the engine cylinder will attain a higher temperature than the shell in which it is seated. By the use of this aluminium sleeve possessing the above characteristics all of the oil contained in the carbon is consumed forming a dry powder which readily drops off of the spark plug and prevents short circuiting. Furthermore carbon particles have no affinity for heated aluminium.

In the drawings:

Figure 1 is a vertical cross sectional view of my device.

Fig. 2 is a vertical cross sectional view of the casing before the electrodes are inserted.

Fig. 3 is an enlarged elevation of the condenser electrode made use of.

Fig. 4 is a bottom plan view of the aluminium sleeve made use of before the grounded electrode is inserted.

Referring to the drawings, 5 indicates the casing of a spark plug which is provided with screw threads 6 for securing it within the cylinder of an internal combustion engine. The lower part of this casing is provided with a cylindrical bore 7 in which a sleeve or bushing 8 is pressed, this bushing being constructed of aluminium. The upper end of the bushing 8 rests against the shoulder 9 formed in the casing and its lower end 10 extending approximately one-fourth of an inch below the edge 11 of the casing 5.

In this aluminium bushing 8 is formed a

cylindrical bore 12 in which the grounded electrode 13 is secured. The upper end of the casing 5 is provided with flat surfaces 14 for the engagement of a wrench. This upper portion is provided with a bore 15, a portion of which is screw threaded to receive the clamping nut 16, this clamping nut securing the porcelain insulators 17 and 18 within the casing, the porcelain member 17 carrying the electrode 19 which is securely embedded therein. The porcelain insulator 18 is provided with an air gap chamber 20 and a cylindrical bore 21 extending from the upper part of said air gap chamber through the insulator.

Through this bore 21, I insert an aluminium electrode 22, this electrode being spaced apart from the electrode 19 in the air gap chamber so as to form a spark gap. This electrode is secured within the insulator 18 by means of a nut 23 which nut is mounted on the screw threads 24 formed on the electrode 22. The screw threaded portion 24 of the electrode 22 extends entirely through the nut 23 and on the exposed portion of the electrode is secured a binding post or nut 25, this nut being also preferably constructed of aluminium.

My purpose in making the electrode 22 and the binding post 25 of aluminium is that it answers as a better electric conductor and it is believed that aluminium containing no carbon will prevent the deposit of carbon within the air gap chamber and on the electrodes.

The purpose of the aluminium sleeve as previously pointed out is to prevent carbon lodging within the spark plug and short circuiting the same. This is due to the fact that the aluminium sleeve 8 entirely surrounds the lower portion of the insulating member 17 and the electrode carried thereby, and has a greater specific heat than the casing 5 in which it is located, and therefore will retain its heat longer and will attain a higher degree of temperature, which not only consumes the oil contained in the carbon but also assists in the combustion within the chamber, thus making a more perfect and rapid combustion within the engine cylinder.

The casing 5 as previously pointed out is made of steel or iron or some metal having

sufficient tensile strength to afford a serviceable screw threaded connection with the engine cylinder and is practically lined with the sleeve of aluminium, which is a non-carbon bearing material and has a higher specific heat than said shell which is so arranged as not to affect the strength of the casing and its serviceable application to the engine cylinder.

10 Having fully described my invention, what I claim is:

1. A spark plug comprising a casing provided on its inside with a shoulder, an insulator provided with a conical portion on its top and a flange seated within the casing on said shoulder, an aluminum sleeve mounted within said casing projecting below the lower end of the same and surrounding the lower portion of said insulator, a grounded electrode carried by the lower end of the plug, an upper insulator provided with a cone shaped cavity in its lower end and a flange around its lower end, an aluminum electrode mounted in the upper insulator and provided with a globular sparking point, and a jam nut provided with a water shed seated in the upper end of the casing and adapted to hold said insulators in position within the casing.

2. A spark plug comprising a casing, a two-piece porcelain provided with flanges and a sparking chamber between them mounted in said casing, a jam nut provided with a water shed mounted in said casing for holding the insulators in position, an aluminum sleeve mounted in the lower end of said casing and projecting beyond the lower end thereof and around the lower insulator, a gasket mounted between said

insulators and a grounded electrode carried by the lower end of the spark plug. 40

3. A spark plug comprising a casing, an aluminum sleeve mounted in the lower end of said casing, a lower insulator provided with an electrode seated in said insulator, a grounded electrode carried by the lower end of the spark plug, an upper insulator, an aluminum electrode mounted in the upper insulator and provided with a globular sparking point, a gasket positioned between the upper and lower insulator, and a jam nut provided with an upper downwardly inclined face screw seated in the casing and adapted to hold said insulators in position within the casing. 45 50 55

4. A spark plug comprising a casing, an upper and lower porcelain insulator mounted in said casing and spaced apart so as to form a spark gap chamber between said insulators, a nut mounted in the casing for securing said insulators together within the casing, an aluminum electrode provided with a globular sparking point mounted in the upper insulator, an electrode mounted in the lower insulator, an aluminum sleeve mounted in the casing and surrounding the lower insulator and projecting below the lower end of said casing, and a grounded electrode carried by the lower end of the plug. 60 65 70

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

FREDERICK HACHMANN.

Witnesses:

WALTER C. STEIN,
ELIZABETH CARTALL.