

Feb. 19, 1924.

1,484,591

M. VAN SLYKE

SPARK PLUG

Filed Feb. 10, 1922

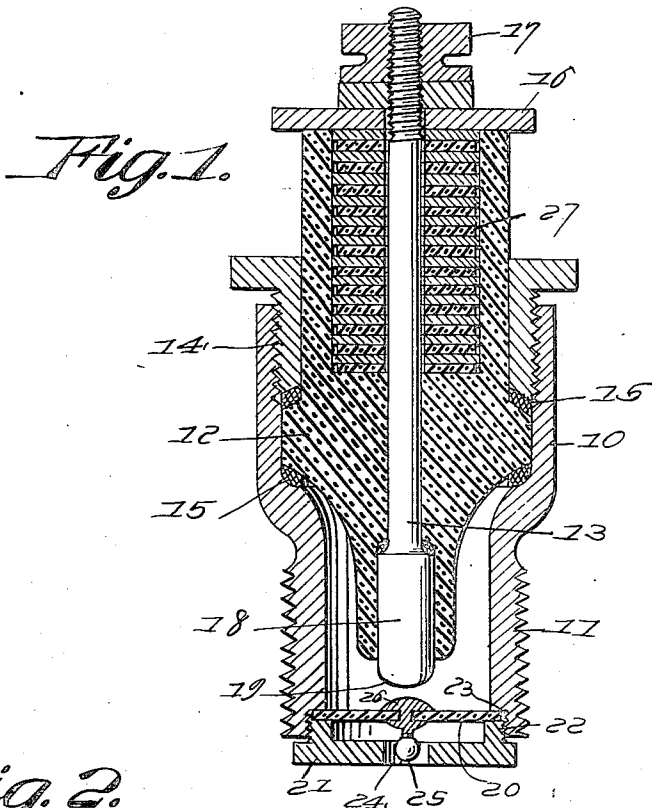


Fig. 2.

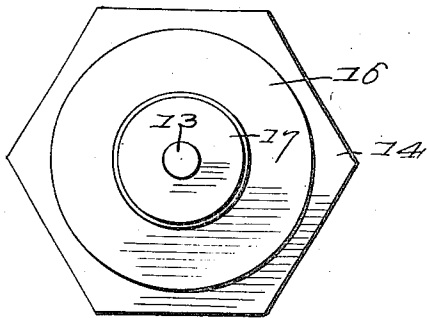
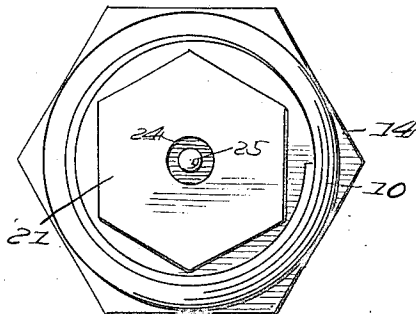


Fig. 3.



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Patented Feb. 19, 1924.

1,484,591

UNITED STATES PATENT OFFICE.

MERRITT VAN SLYKE, OF JACKSONVILLE, FLORIDA.

SPARK PLUG.

Application filed February 10, 1922. Serial No. 535,499.

To all whom it may concern:

Be it known that I, MERRITT VAN SLYKE, citizen of the United States of America, residing at Jacksonville, in the county of Duval and State of Florida, have invented new and useful Improvements in Spark Plugs, of which the following is a specification.

The object of the invention is to provide a self-cleaning spark plug and furthermore to provide a spark plug with improved means of intensifying the spark; and incidentally to provide a spark plug wherein the cleaning thereof when necessary is simplified; and with these objects in view the invention consists in a construction and combination of parts of which a preferred embodiment is shown in the accompanying drawings, wherein:—

Figure 1 is a sectional view of a spark plug embodying the invention.

Figures 2 and 3 are opposite end views thereof.

The spark plug consists of the casing 10 threaded as in the ordinary practice at 11 for engagement with the opening in the cylinder and having secured therein an insulator 12 of porcelain or equivalent material designed and constructed to carry the core 13 and held in place in the casing by a nut 14, suitable packing gaskets 15 being employed to cushion the bearing of the insulator in the casing and the bearing of the nut thereon. The outer end of the insulator is fitted with a cap disk 16 held in place by the binder nuts 17 engaged with the threaded end of the core.

The inner end of the core, which is preferably enlarged to form a head 18 together with the portion of the insulator which encloses the same with the extension of the rounded terminal 19 thereof is housed within the casing from which the contents of the motor cylinder are excluded by a diaphragm 20 which transversely spans the lower end of the spark plug casing and is held in place by a cap nut 21 forming an inner casing head and provided with an exteriorly threaded flange 22 engaged with an internal thread at the lower end of the spark plug casing. Said flange bears against the periphery of the diaphragm 20 which is engaged with a seat formed by a shoulder 23.

The head 21 at the inner end of the casing is provided with a central opening 24 of which the wall constitutes one spark plug terminal, and the complementary spark plug

terminal consists of a preferably spherical arm 25 which depends from the center of the diaphragm 20 and forms part of a button 26 which is preferably spherically rounded and is disposed in opposition to the spherically rounded terminal of the core head 18 and is spaced therefrom to constitute an intensifying spark gap.

While the diaphragm which is supported only at its periphery serves as a means of preventing the access of gases or products of combustion from the cylinder into the space in which the head 18 of the core is exposed, and thus serves to effectually protect the spark gap terminals from any accumulation of carbon or other foreign material, it is exposed to the pressure due to explosions in the cylinder through the opening 24 in the casing head 21, but the opening 24 is relatively restricted in area so as to minimize the entrance of foreign matter into the chamber between the head and the diaphragm, and the spherical terminal 25 is preferably located in the opening 24 so that the vibration of the diaphragm incident to explosions in the cylinder causes a vibration of the terminal 25 to prevent any accumulation of carbon or other foreign matter in the opening 24. Any accumulations in the chamber between the head 21 and the diaphragm may readily be removed by displacing the head which will thus expose the entire inner surface of the diaphragm.

The insulator is preferably cored as indicated at 27 to form a cavity through which the core 13 extends, and located in the cavity is a condenser unit consisting in the construction illustrated of alternately arranged disks of metal and insulating material as of copper and mica respectively adapted to serve as a means of reinforcing the intensifying effect of the spark gap by constituting a reservoir in the nature of a Leyden jar.

Having described the invention, what is claimed as new and useful is:—

1. A spark plug having a casing and terminals consisting of an apertured head at the inner end of the casing and a knob yieldingly suspended in the aperture for movement perpendicular to the plane of the head by pressure within the cylinder of an engine.

2. A spark plug having a casing provided at its inner end with a head having a central aperture and forming one sparking terminal, a diaphragm supported in the casing in spaced relation with said head and ex-

posed to cylinder pressure through said aperture, and the other terminal supported by said diaphragm.

3. A spark plug having a casing provided at its inner end with a head having a central aperture and forming one sparking terminal, a diaphragm supported in the casing in spaced relation with said head and exposed to cylinder pressure through said aperture, and the other terminal supported by said diaphragm and located in the aperture.

4. A spark plug having a casing provided at its inner end with a head having a central aperture and forming one sparking terminal, a diaphragm supported in the casing in spaced relation with said head and exposed to cylinder pressure through said aperture, and the other terminal supported by said

diaphragm and arranged in the aperture, the diaphragm being peripherally supported and centrally free.

5. A spark plug having a casing provided at its inner end with a head having a central aperture and forming one sparking terminal, a diaphragm supported in the casing in spaced relation with said head and exposed to cylinder pressure through said aperture, and the other terminal supported by said diaphragm, the spark plug having a main electrode divided to form spark gap terminals of which one is carried by the diaphragm.

In testimony whereof he affixes his signature.

MERRITT VAN SLYKE.