F. BARTL.

SPARK PLUG.

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918,726.

Patented Apr. 20, 1909.

Fig. 1.

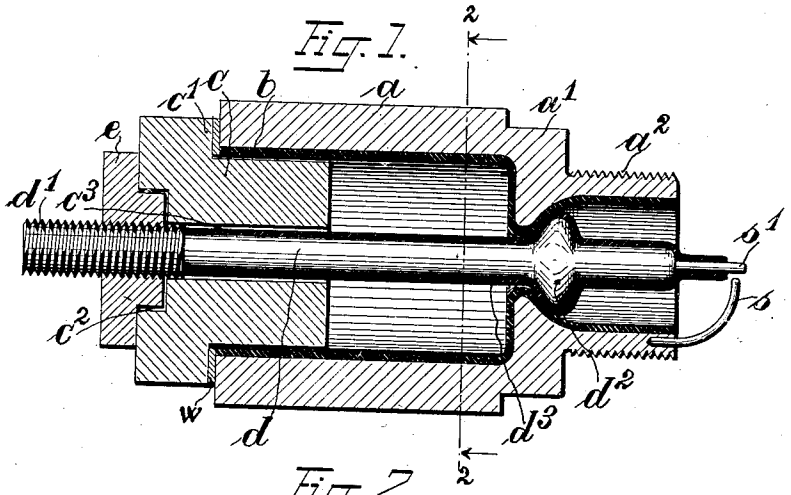
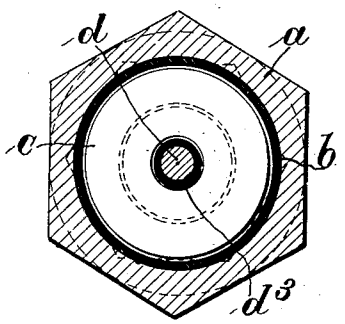


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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SPARK-PLUG.

No. 918,726. Specification of Letters Patent. Patented April 20, 1909.

Application filed August 12, 1907. Serial No. 388,101.

To all whom it may concern:

Be it known that I, FRANZ BARTL, a subject of the Emperor of Austria-Hungary, and a resident of Far Rockaway, county of Queens, and State of New York, have invented certain new and useful Improvements in Spark-Plugs, of which the following is a specification.

This invention has reference to improvements in spark-plugs and pertains particularly to that type which is used in explosive engines for automobiles and the like

It is the special object of my invention to produce a spark plug of very simple construction composed of but few elements, whose parts are absolutely indestructible and provided with an insulation which forms part thereof and is integral therewith. The insulation used in this new spark-plug resists heat and excessive heat does not crack or break it, but makes same malleable. The two principal parts of the device are both insulated; therefore the spark-plug remains operative if one part should be damaged by carelessness or otherwise.

The invention is illustrated in the accompanying drawing, in which:—

Figure 1 represents in longitudinal section a spark-plug which embodies in desirable form the present improvements, and Fig. 2 shows same in cross section on line 2—2 of Fig. 1.

Similar characters of reference denote like parts in all the figures.

In the drawing a represents the casing which is preferably made of metal and hexagonal in shape, as shown in Fig. 2, so that a wrench may be applied. The right hand end portion of the casing, as shown in Fig. 1, is first somewhat reduced in diameter, as shown at a^1, and then it is again reduced in diameter and a screw thread a^2 is formed on this last mentioned portion. In this threaded portion of the shell a silver wire s is inserted which is curved toward the center of the plug. The interior surface of the portion a^1 of the shell is conically shaped, as shown in Figs. 1 and 3. The entire interior surface of the shell is insulated by enamel b which is produced thereon in the well known manner. Thus the insulation on the interior surface of the shell forms part thereof and is integral therewith.

At the left hand end, the shell is open at full width. A plug c made of insulating material such as stone, porcelain, and the like fits into this opening. This plug is provided with a shoulder c^1 and a washer w is applied between this shoulder and the adjoining open end of the shell. An annular incision c^2 and a narrower channel c^3 are produced in this plug.

A pin d is centrally located within the spark-plug. It has on one end a screw thread d^1 and near the right hand end portion a head d^2. This pin is insulated by a coating of enamel d^3 in like manner as the interior shell or casing a. The insulation d^3 of the pin extends from the inner end of the screw thread d^1 throughout the entire length of the pin and covers at the right hand end a straight silver wire s^1, whose end is in close proximity to the end of the silver wire s. The pin d is inserted into the spark-plug from the right hand end of same and the head d^2 rests against the conical interior surface of the portion a^1 of the casing. The screw d^1 extends beyond the end of the inserted plug c and a nut e fits on said screw.

For tightening the device shown in Fig. 1, the nut e on the screw d^1 is simply turned until it presses against the insulating stone or porcelain plug c whereby the head d^2 of the pin is pressed against the inner conical surface of the portion a^1 of the shell.

The spark-plug operates in the usual manner; the spark passing between the ends of the silver wires s and s^1. During use, when heat is developed by explosive gas, the enamel does not crack, break, or peel off, because the enamel softens slightly and becomes malleable, making thus a more perfect joint between the head d^2 and the inner conical surface of the portion a^1 so that no oil can flow into the interior of the insulating shell. By virtue of the smooth surface of the shell and the pin the spark-plug is easily and quickly cleaned.

It is self-evident that the spark-plug above described is more durable than those heretofore used by virtue of its compactness in construction and insulating material employed therein. In case the shell and the pin should be damaged by carelessness or during transportation and part of the insulation removed, the plug is still operative and reliable. Even when both parts, the insulated shell and the insulated pin should be damaged by accident, so that some metal should be exposed on both parts, the plug will be opera-

tive and reliable. No short circuit will be caused so long as the two damaged spots do not occur too close together.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. An indestructible spark plug for explosive engines comprising essentially two parts consisting of a metallic shell with contracted portion having an inner coating of refractory insulating material lastingly produced thereon and adapted to become malleable by excessive heat, and an inner metallic electrode with a head adapted to lodge in the contracted portion of the shell and having a coating of refractory insulating material on the outside, two sparking wires one in each part whose free ends are arranged closely together, and means for securing the inner electrode tightly within the shell.

2. An indestructible spark plug for explosive engines comprising a metallic shell open at one end forming inside near the other end portion a narrow conical surface and provided with an inner coating of enamel, a curved sparking wire secured in one end portion of the shell, an inner metallic electrode centrally located within the shell with a head adapted to lodge on the inner conical surface of said shell and provided with an outer coating of enamel, a sparking wire partly covered by enamel, in the end portion of the inner electrode, and means provided in the opposite open end of the shell for securing the inner electrode tightly within same.

Signed at New York, N. Y., this 9th day of August, 1907.

FRANZ BARTL.

Witnesses:
LUDWIG K. BÖHM,
JOHN T. CARMODY.