C. BATEHOLTS.

SPARK PLUG.

APPLICATION FILED MAY 4, 1908.

913,453.

Patented Feb. 23, 1909.

Fig. 1

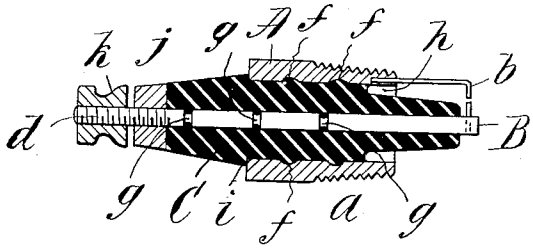


Fig. 2.

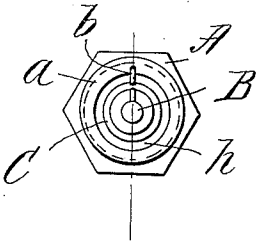
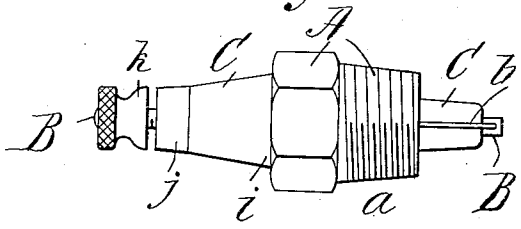


Fig. 3.



WITNESSES:

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SPARK-PLUG.

No. 913,453. Specification of Letters Patent. Patented Feb. 23, 1909.

Application filed May 4, 1908. Serial No. 430,831.

To all whom it may concern:

Be it known that I, CLINTON BATEHOLTS, a citizen of the United States of America, and resident of Pittsfield, in the county of Berkshire and State of Massachusetts, have invented certain new and useful Improvements in Spark-Plugs, of which the following is a full, clear, and exact description.

This invention contemplates the provision of a simple, cheap, and efficient spark plug for explosive engines in which the electrode rod, extending axially through, and projecting endwise beyond, the ends of the metallic shell or body of the plug, is supported by and separated from the metallic shell by a body of plastic insulating material molded in its interposed position, so as to be permanently engaged with the internal walls of the metallic shell, and also molded closely around and in intimate permanent contact with and immovably supporting, the rod, whereby leakage of gas, oil, air, or other agent through the plug is effectually prevented, whereby liability of fracture of the molded insulating body by temperature changes or mechanical violence is reduced to a minimum, and whereby the acceptability or desirability of the spark plug as a gas engine equipment is assured.

The improved spark plug is hereinafter described in detail in conjunction with the accompanying drawings in which:—

Figure 1 is a central longitudinal section; Fig. 2 is an inner end view and Fig. 3 is a side view.

Similar characters of reference indicate corresponding parts in all of the views.

The spark plug comprises an annular metallic shell A having a portion *a* of standard tapered and screw threaded formation and provided at its inner end with a terminal extension or electrode *b*. The appliance furthermore comprises an electrode rod B having its extremities projecting beyond the ends of the shell, its outer one being screw threaded, as shown at *d*; and the said shell and electrode rod have shoulders *f* and *g* respectively in the internal wall of the shell and circumferentially of the intermediate portion of the rod,—said shoulders being practicably constituted by grooves, as shown in Fig. 1. The spark plug, furthermore, comprises a body C of plastic insulating material molded within and permanently engaged and interlocked with the internally shouldered wall of the metallic shell, extending at both its extremities beyond the ends of the shell, but terminating at points removed from the end of the electrode rod and molded closely around, permanently engaged and interlocked with and supporting the rod throughout the entire length of such molded plastic body, which latter, as above stated and shown, is considerably longer than the length of the metallic portion A of the plug, so that while the rod has an unusually long bearing and supporting connections through the molded plastic insulating body, the body itself is only subject to the constrictions on the shell under temperature changes for but a fraction of the length of the molded body,—a portion of the reduced inner extremity of the molded body having, as shown at *h*, a separated relation to the metallic shells.

The outwardly projecting portion of the molded plastic body is made with a shoulder enlargement *i* engaging the outer end of the shell, and a metallic collar *j* is engaged about the outer extremities of the electrode rod and is set against the outwardly projecting end of the insulating body, while the binding nut *k* screw engages on the outer threaded extremity of the electrode rod, with which the collar *j* is in metallic connection, for the confinement in its proper place of the conductor which is a part of or an extension from the spark coil.

In the construction of the plug, the shell A advantageously may be of brass or iron, the electrode rod of steel, the collar and nut of brass or iron and the electrode point at the inner end of the plug of German silver. The molded plastic body is composed of a composition which when hardened is as refractory as granite and when finished as to its projecting extensions, is as smooth as soapstone.

I claim:—

1. A spark plug comprising an annular externally screw threaded metallic shell having a terminal extension at the inner end thereof, an electrode rod arranged axially within said metallic shell, and having its extremities projecting beyond the ends of the shell, said shell having shoulders at its internal wall, and the intermediate portion of the rod having circumferential shoulders, and a body of plastic insulating material molded within the shell and around the electrode rod and having permanent interlocking engagements with the shoulders thereof.

2. A spark plug comprising an annular externally screw threaded metallic shell having a terminal extension at the inner end thereof, an electrode rod arranged axially within said metallic shell, and having its extremities projecting beyond the ends of the shell, said shell having shoulders in its internal wall and the rod having circumferential shoulders, and a body of plastic insulating material molded within and permanently engaged and interlocked with the internal shouldered wall of the shell, extending at both its extremities beyond the ends of the shell and terminating within the ends of the rod and molded closely around, permanently engaged and interlocked with, and supporting, the electrode rod throughout the entire length of such molded plastic body.

3. A spark plug comprising an annular externally screw threaded metallic shell having a terminal extension at the inner end thereof, an electrode rod arranged axially within said metallic shell, and having its extremities projecting beyond the ends of the shell, its outer one being screw threaded, said shell having shoulders in its internal wall and the rod having circumferential shoulders, a body of plastic insulating material molded within and permanently engaged and interlocked with the internal shouldered wall of the shell, extending at both its extremities beyond the ends of the shell, terminating within the ends of the rod and molded closely around, permanently engaged and interlocked with, and supporting, the electrode rod throughout the entire length of such molded plastic body, and having its projecting portion located next to and extended outwardly beyond the metallic shell made with a shoulder enlargement engaging the outer end of the shell, a metallic collar engaged about the outer extremity of the electrode rod and resting against the outwardly projecting end of the molded plastic body, and a binding nut screw engaged on the threaded extremity of the rod adjacent said metallic collar.

Signed by me at Pittsfield, Mass., in presence of two subscribing witnesses.

CLINTON BATEHOLTS.

Witnesses:
GEORGE IVERSON,
GEORGE E. SHEPARDSON.