

## **Edmond Berger**

### **“Invented the Spark Plug in 1839”**

“Some historians have reported that Edmond Berger who invented an early spark plug (sometimes in British English called the sparking plug) on February 2, 1839. However, Edmond Berger did not patent his invention.

And since spark plugs are used in internal combustion engines and in 1839 these engines were in the early days of experimentation.

Therefore, Edmond Berger's spark plug, if it did exist, would have had to have been very experimental in nature as well or perhaps the date was a mistake.

### **What Is a Spark Plug?**

According to Britannica, a spark plug or sparking plug is "a device that fits into the cylinder head of an internal-combustion engine and carries two electrodes separated by an air gap across which current from a high-tension ignition system discharges to form a spark for igniting the fuel."

More specifically, a spark plug has a metal threaded shell that's electrically isolated from a central electrode by a porcelain insulator. The central electrode is connected by a heavily insulated wire to the output terminal of an ignition coil. The spark plug's metal shell is screwed into the engine's cylinder head and thus electrically grounded.

The central electrode protrudes through the porcelain insulator into the combustion chamber, forming one or more spark gaps between the inner end of the central electrode and usually one or more

protuberances or structures attached to the inner end of the threaded shell and designated the side, earth or ground electrodes.

### **How Spark Plugs Work**

The plug is connected to the high voltage generated by an ignition coil or magneto. As current flows from the coil, a voltage develops between the central and side electrodes. Initially, no current can flow because the fuel and air in the gap is an insulator. But as the voltage rises further, it begins to change the structure of the gases between the electrodes.

Once the voltage exceeds the dielectric strength of the gases, the gases become ionized. The ionized gas becomes a conductor and allows current to flow across the gap. Spark plugs usually require a voltage of 12,000–25,000 volts or more to "fire" properly, although it can go up to 45,000 volts. They supply higher current during the discharge process, resulting in a hotter and longer-duration spark.

As the current of electrons surges across the gap, it raises the temperature of the spark channel to 60,000 K. The intense heat in the spark channel causes the ionized gas to expand very quickly, like a small explosion. This is the "click" heard when observing a spark, similar to lightning and thunder.

The heat and pressure force the gases to react with each other. At the end of the spark event, there should be a small ball of fire in the spark gap as the gases burn on their own. The size of this fireball or kernel depends on the exact composition of the mixture between the electrodes and the level of combustion chamber turbulence at the time of the spark. A small kernel will make the engine run as though

the ignition timing was retarded, and a large one as though the timing was advanced.”

Source: Thought Co

Information Link:

<https://www.thoughtco.com/spark-plugs-edmond-berger-4071196>