

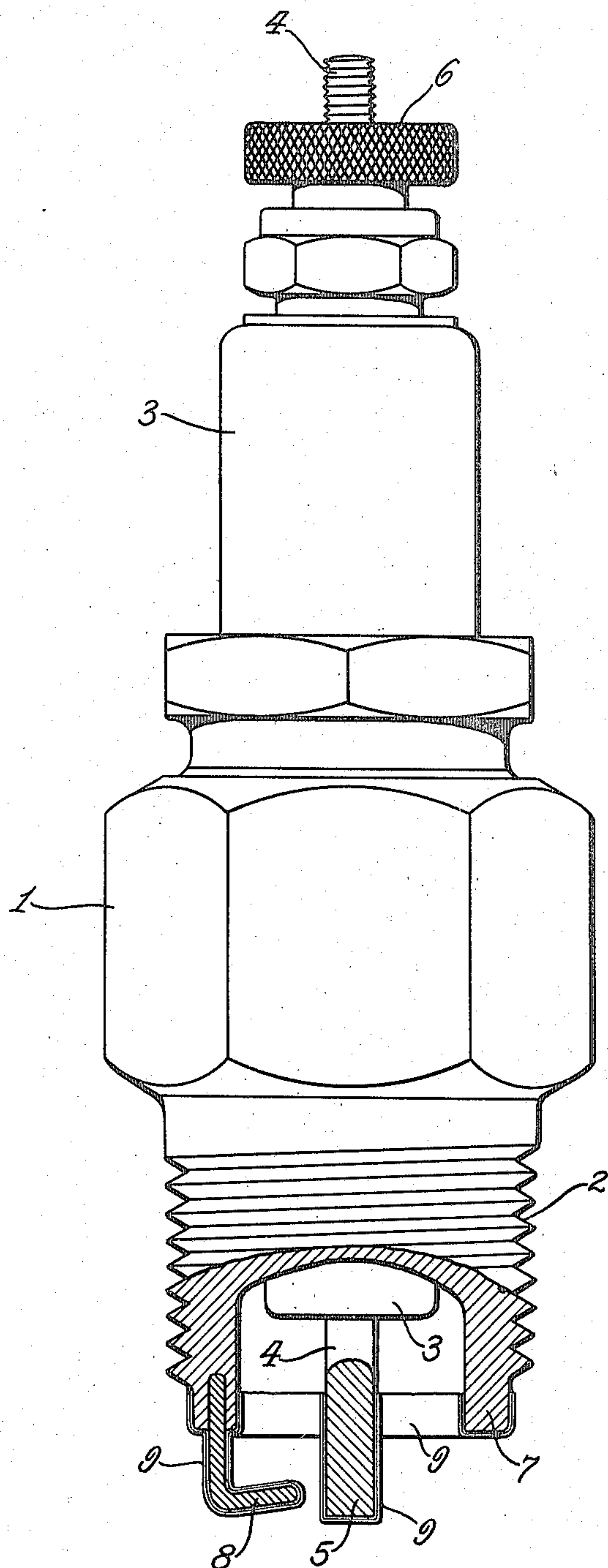
Nov. 18, 1924.

1,515,866

L. F. MARTEN

SPARK PLUG

Filed June 24, 1922



Inventor:  
LOUIS F. MARTEN,  
By John H. Brunning,  
His Attorney.



Patented Nov. 18, 1924.

1,515,866

# UNITED STATES PATENT OFFICE.

LOUIS F. MARTEN, OF ST. CHARLES, MISSOURI; LENA J. MARTEN EXECUTRIX OF SAID  
LOUIS F. MARTEN, DECEASED.

## SPARK PLUG.

Application filed June 24, 1922. Serial No. 570,659.

*To all whom it may concern:*

Be it known that I, LOUIS F. MARTEN, a citizen of the United States, and residing at St. Charles, county of St. Charles, Missouri, have invented the new and useful Improvement in Spark Plugs, of which the following is a specification.

This invention relates to spark plugs, such as are used on internal combustion engines and the like.

One of the objects of this invention is to provide a spark plug in which pitting or corrosion of the electrodes may be obviated.

Another object of this invention is to provide a spark plug in which the deposit of carbon on the electrodes may be prevented.

Further objects will appear from the detail description taken in connection with the accompanying drawing, which represents a view in elevation of a spark plug embodying this invention.

Referring to the accompanying drawing, 1 represents the body of the plug which is ordinarily constructed of steel and is provided with threads 2 for attachment to the cylinder head. Suitably mounted in the body 1 is an insulating tube 3 of porcelain or other suitable material and within which is suitably mounted a metal rod 4, the lower end of which is adapted to provide a central electrode 5. The upper end of the rod 4 may be threaded and a suitable thumb nut 6 mounted thereon for making the necessary electrical connections thereto. All of these parts may be of any usual well known construction and will, therefore, require no further description.

The lower end of the body 1 is formed to provide a rim 7 spaced from the central electrode 5 and mounted on the rim 7 in any usual manner is an electrode 8 which may be bent toward the electrode 5 so as to provide a small air gap therebetween.

In spark plugs as ordinarily constructed, pitting or corrosion of the electrodes 5 and 8 takes place in service. This is due to burning of the electrodes by the heating effect of the spark and the consequent formation of oxide on the surface of the electrode. This oxide forms in a layer on the surface and being a poor conductor of electricity, renders the action of the spark plug uncertain. Furthermore the formation of oxide on the electrode surface renders said surface

rough and uneven, a condition which permits the deposit of carbon thereon.

In accordance with this invention, the electrodes 5 and 8 and the rim 7 are plated with silver or a similar metal having a high heat conductivity and giving a non-oxidizable surface. Gold and copper are also serviceable to a lesser extent for this purpose, but more satisfactory results are obtained from silver. Silver not only has a high heat conductivity but it does not readily oxidize in the air. Consequently when a spark is made between the electrodes, the heat of the spark on the electrode is quickly carried away by conduction through the silver coating. As a result, the temperature of the electrodes at the point of formation of the spark is prevented from rising to a point where oxidation will take place. Furthermore if the temperature should rise, the material of the coating offers a greater resistance to oxidation than other materials.

It will be noted further that in accordance with this invention the coating 9 is continuous over the electrode 8 and also the end of the shell 7. This provides a quantity of metal of high conductivity in a continuous mass and extending from the sparking surface of the electrode over an extended area of the shell. This mass of metal, therefore, provides a sort of heat reservoir into which the heat liberated at the electrode may flow. The heat thus liberated is quickly carried away from the electrode so as to keep the same from getting too hot. During the short interval between applications of heat, the heat so stored in this reservoir may be transmitted to the shell by which it may then be carried off for radiation. It will be noted further that the metal 9 makes intimate contact with an extended surface of the shell 7. This provides a large area of contact and, therefore, contact of high conductivity between the metal 9 and the shell 7 so as to provide for a rapid transfer of heat from the former to the latter. It is evident, therefore, that this invention provides means for rapidly leading off the heat from the sparking surfaces and delivering the same to the shell for radiation.

The silver coating, therefore, which is indicated at 9 serves not only to prevent corrosion of the electrodes, but on account of



the fact that it remains clean and smooth, prevents the deposit of carbon thereon. Consequently a spark plug constructed in accordance with this invention will have a longer useful life than that of the ordinary plug.

It is obvious that various changes may be made in details of construction without departing from the spirit of this invention; it is, therefore, to be understood that this invention is not to be limited to the specific details shown and described.

Having thus described the invention, what is claimed is:

1. A spark plug, comprising, a central electrode, a shell having an electrode between which and said central electrode sparking takes place, a non-oxidizing adhering plating of high conductivity covering the sparking surfaces of said central electrode, and a continuous non-oxidizing adhering plating of high conductivity covering the sparking surface of said shell electrode and the end of said shell.

2. A spark plug, comprising, a central electrode, a shell having an electrode between which and said central electrode sparking takes place, a plating of non-oxi-

dizing metal covering the sparking surface of said central electrode, and a non-oxidizing metal coating of high conductivity covering said shell and electrode and adapted to provide a heat reservoir for drawing heat from the sparking surface thereof.

3. A spark plug, comprising, a central electrode, a shell having an electrode between which and said central electrode sparking takes place, a plating of non-oxidizing metal covering the sparking surface of said central electrode, and a non-oxidizing metal coating of high conductivity covering the end of said shell and its electrode and adapted to provide contact of high conductivity between said coating and said shell for flow of heat from said electrode to said shell.

4. A spark plug comprising, a central electrode, a shell having an electrode between which and said central electrode sparking takes place, and a continuous coating of silver covering the shell electrode and the shell.

In testimony whereof I affix my signature this 15th day of June, 1922.

LOUIS F. MARTEN.