

A. ZÄHRINGER.
SPARKING PLUG FOR INTERNAL COMBUSTION ENGINES.
APPLICATION FILED NOV. 15, 1909.

1,032,099.

Patented July 9, 1912.

Fig. 1.

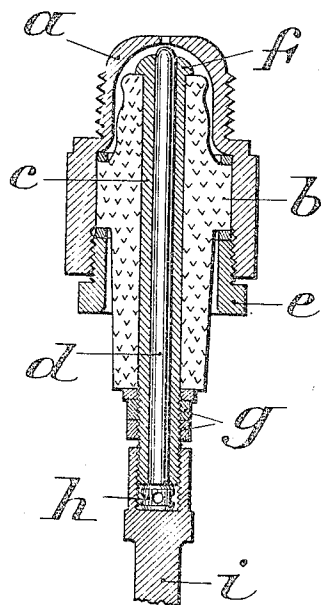
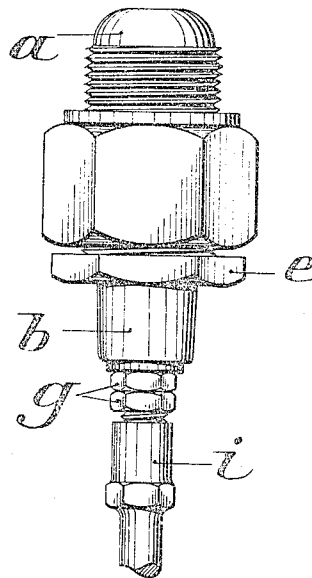


Fig. 2.



WITNESSES

E. C. Schumann

R. Gout

INVENTOR

Arnold Zähringer
by Louis Zähringer & Will
Attys.

UNITED STATES PATENT OFFICE.

ARNOLD ZÄHRINGER, OF STUTTGART, GERMANY, ASSIGNOR TO THE FIRM OF ROBERT BOSCH, OF STUTTGART, GERMANY.

SPARKING PLUG FOR INTERNAL-COMBUSTION ENGINES.

1,032,099.

Specification of Letters Patent.

Patented July 9, 1912.

Application filed November 15, 1909. Serial No. 523,192.

To all whom it may concern:

Be it known that I, ARNOLD ZÄHRINGER, engineer, a subject of the German Emperor, residing at 13 Hoppenlastrasse, Stuttgart, Germany, have invented certain new and useful Improvements in Sparking Plugs for Internal-Combustion Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to sparking-plugs for internal combustion engines and more particularly to that kind of plug in which stationary electrodes are employed.

The object of my invention is to provide means for easily removing one electrode without being obliged to unscrew the entire plug.

In sparking plugs of this kind usually one electrode is made in the form of a rod, passing through an insulating socket forming the body of the plug, and adjustable with relation to the other electrode, which is in conductive connection with the motor cylinder, so that a spark gap of proper width is formed between the electrodes.

My invention consists in disposing the means employed for retaining the said rod in adjusted position at the outer end of the plug so that by removing the said retaining means the rod forming the insulated electrode can be withdrawn without having to remove the entire plug.

In the accompanying drawings Figure 1 is a longitudinal section, Fig. 2 an elevation of a plug constructed according to my invention.

The sparking plug consists as in known constructions of a cap *a* threaded to be screwed tightly into a correspondingly threaded boring in the wall of the motor cylinder not shown. It contains an insulating socket comprising the piece *b* retained in position by a screw threaded nut *e*, and having a bore containing a sleeve *c*. The sleeve *c* is held in place by a head *f* and a pair of nuts *g*. A rod *d* forming the inner electrode proper is inserted into the sleeve *c* its proper adjustment being secured by means of a head *h*, which is pressed against the outer end of the sleeve *c* by a screw threaded cap *i*. This arrangement effec-

tually prevents a displacement of rod *d* with respect to the other electrode by the action of the gas pressure to which it is exposed during the operation of the motor. On the other hand it can easily be removed in order to be exchanged or for the purpose of cleaning the electrode surfaces without unscrewing the entire plug, by unscrewing the cap *i* and then withdrawing it from the outer end of the sleeve and the plug. Moreover when the rod becomes shortened by wear it can easily be brought back to the initial adjustment with respect to the stationary electrode *a* by removing a portion of the threaded end of sleeve *c* on a lathe or otherwise.

My invention is not limited to the illustrated construction in which the rod *d* is secured in its place by a cap such as *i*. In some cases it may be preferable to provide the inside of the sleeve *c* and the rod *d* itself with corresponding threads and to screw the latter into the sleeve, by which means a similar result is obtained.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

1. In a sparking plug for internal combustion engines, a body of insulating material within the plug, a sleeve fixed in the insulating material, an electrode rod extending axially of said sleeve and removable from the outer end thereof, and a detachable connection between the sleeve and the electrode rod, disposed at said outer end and normally holding the electrode rod in fixed position with the sleeve.

2. In a sparking plug for internal combustion engines, the combination with a fixed electrode forming a part of the body of the plug, of a body of insulating material filling the plug, a sleeve centrally disposed therein, means for preventing longitudinal displacement of said sleeve with relation to the insulating body, an electrode rod passing loosely through and being provided with a head adapted to abut the outer end of said sleeve to thereby determine the length of the spark gap between the inner end of said rod and the fixed electrode, and means for retaining said head in contact with said sleeve.

3. In a sparking plug for internal com-

bustion engines, a body of insulating material within the plug, a sleeve fixed in the insulating material and having its outer end screw threaded and extended beyond the insulating material, an electrode rod passing
5 loosely through and being provided with a head adapted to abut the outer end of said sleeve, and a screw cap surrounding the outer end of said sleeve and adapted to

clamp the head of the electrode rod against 10 the end of the sleeve.

In testimony whereof I have affixed my signature, in presence of two witnesses.

ARNOLD ZÄHRINGER.

Witnesses:

MAX ANSCHUTZ,

REINHOLD ELWERT.