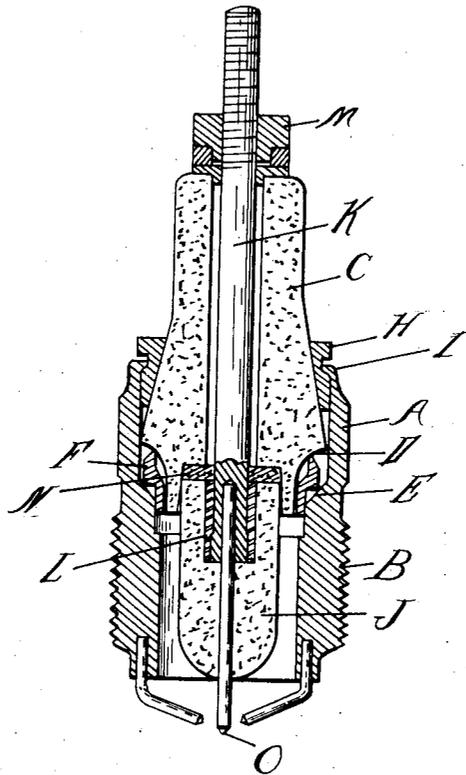


A. J. CHAMPION.
SPARK PLUG.
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1,094,528.

Patented Apr. 28, 1914.



Witnesses
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UNITED STATES PATENT OFFICE.

ALBERT J. CHAMPION, OF FLINT, MICHIGAN, ASSIGNOR TO CHAMPION IGNITION COMPANY, OF FLINT, MICHIGAN, A CORPORATION OF MICHIGAN.

SPARK-PLUG.

1,094,528.

Specification of Letters Patent.

Patented Apr. 28, 1914.

Application filed October 24, 1911. Serial No. 656,534.

To all whom it may concern:

Be it known that I, ALBERT J. CHAMPION, a citizen of the United States of America, residing at Flint, in the county of Genesee and State of Michigan, have invented certain new and useful Improvements in Spark-Plugs, of which the following is a specification, reference being had therein to the accompanying drawings.

In the present state of the art it is usual in the construction of spark plugs to provide the insulator member with an integral enlargement which forms the securing means to the metallic case. When the device is in operation the heat of combustion imparted to the inner end of the insulator is conducted therethrough to the enlarged portion but on account of the greater cross section and also the fact that the enlargement is in contact with the metallic case, a considerable difference in temperature exists between the two portions of the insulator body. These insulators are usually formed of porcelain which is easily fractured by unequal heating and consequently the point of change in the temperature of the insulator becomes a weak point in the construction.

It is the object of the present invention to avoid this defect by forming the porcelain which is in clamping engagement with the case and that which extends inward to support the electrode, of separate pieces so that a difference in temperature condition will not cause a fracture. This is accomplished by the construction as hereinafter set forth.

In the drawing, the spark plug is represented in central longitudinal section.

A is the metallic casing provided with the usual threaded nipple B for engagement with the threaded aperture in the engine case.

C is an insulator member secured within the casing A and extending outward therefrom. The inner end of this member C is provided with a shoulder D which is opposed to a shoulder E in the case, a packing ring F being placed between the opposed shoulders. The member C is secured in position by any suitable means but as shown, this consists of a ring H engaging the tapering portion of the insulator and secured to the casing A by a flange I spun or peened into engagement therewith.

With the construction as thus far de-

scribed, the insulator C does not extend to the inner end of the plug but terminates at a point but slightly in advance of the securing shoulder E. To complete the insulator a section J is engaged therewith, which section extends inward and forms the support for the insulated electrode. These two sections C and J preferably engage each other telescopically and are secured by a metallic shank K which is cemented or otherwise secured at L in the section H and extends through the hollow section C to the outer end thereof where it is engaged by a clamping nut M. There is also preferably a washer or cushion N interposed between the adjacent ends of the sections J and C, the arrangement being such that when the nut M is tightened the two sections of the insulator will be secured in fixed relation to each other.

O is the insulated electrode of smaller cross-section than the member K and this electrode extends centrally through the inner insulated section J and engages the metallic shank K.

With the construction as described in use the heat of explosion is imparted directly to the insulator J and is conducted through the body thereof. When however, the inner end of said section is reached the break between the same and the section C as well as the cushion material N will intercept the heat conduction so that the outer member C remains at a much lower temperature. This will avoid the fracturing of the porcelain body while the insulation is in every respect just as good as with the integral construction.

What I claim as my invention is:

1. In a spark plug, the combination with the case, of an insulator therein including a section secured to the case and an inner section, a shank attached at one end to the inner section at a point considerably above the inner end thereof, said shank extending through the first-mentioned section and serving to clamp the two sections together, and an electrode of smaller cross-section than the shank extending within the inner section and being in electrical contact with the shank.

2. In a spark plug, the combination with the case, of an insulator therein including a section secured to the case and an inner sec-

tion, the outer end of the latter section being provided with a counter-sink, a shank having one end arranged within the counter-sink and secured thereto, said shank extending through the first-mentioned section and serving to clamp the two sections together, and an electrode of smaller cross-section than the shank extending within the inner

section and in electrical contact with the shank.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT J. CHAMPION.

Witnesses:

W. J. BELKNAP,
JAMES P. BARRY.