

T. G. McDOUGAL.
SPARK PLUG.
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1,386,883.

Patented Aug. 9, 1921.

Fig. 1

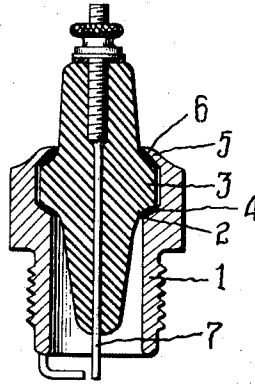
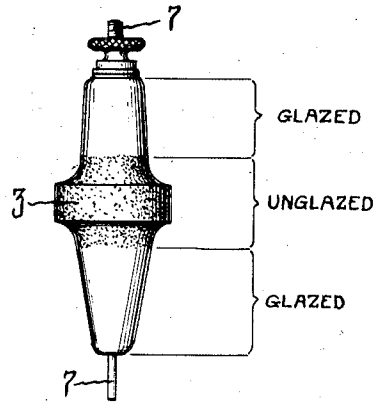


Fig. 2



Witness:
L. W. Pate

Inventor
Taine G. McDougal
By his Attorneys
Blackmore, Spencer & Flint.

UNITED STATES PATENT OFFICE.

TAINE G. McDOUGAL, OF FLINT, MICHIGAN, ASSIGNOR TO CHAMPION IGNITION COMPANY, OF FLINT, MICHIGAN, A CORPORATION OF MICHIGAN.

SPARK-PLUG.

1,386,883.

Specification of Letters Patent.

Patented Aug. 9, 1921.

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To all whom it may concern:

Be it known that I, TAINE G. McDOUGAL, a citizen of the United States, and a resident of Flint, county of Genesee, and State of Michigan, have invented certain new and useful Improvements in Spark-Plugs, of which the following is a full, clear, concise, and exact description, such as will enable others skilled in the art to which the invention relates to make and use the same, reference being made therein to the accompanying drawings, which form a part of this specification.

Spark plug porcelains as heretofore constructed have been glazed over those areas which contact with the associated shell or retaining parts, with the result, I have discovered, that considerable electrical leakage takes place between the central electrode and the shell. I have also discovered that the glaze is a better conductor, particularly at high temperatures, than is the body of the porcelain. These discoveries I make use of, in accordance with the present invention, by providing over the areas of contact of the porcelain with the shell or other metallic parts a belt or belts of unglazed surface, whereby electrical connection of the shell with the central electrode, both at top and bottom, is more effectively broken.

While the unglazed belt or belts may be formed in different ways, and while the position and extent of the unglazed area is subject to variation, I prefer to simply guard a single wide belt extending over the zone or zones of contact of the porcelain with the shell or retaining elements in such manner as to protect it from the glaze spray in the glazing operation. By proceeding in this manner, the objects sought are accomplished with substantially no increase in expense.

In the drawings:

Figure 1 is a central vertical section showing one well known type of plug to which the invention is applicable. It will be understood that the particular plug selected is merely by way of example; in other words, the invention may be applied equally well to the other types of plugs in common use.

Fig. 2 is an elevation of the porcelain and central electrode which appears in Fig. 1.

The metal shell 1, in the construction shown, is provided with a shoulder 2, on which the central rib 3 of the porcelain bears,

a washer 4 ordinarily being interposed. Metallic retaining means, which in this instance is in the form of a pressed or spun flange 5 and an interposed sealing washer 6, bears on the upper surface of the rib 3 to securely hold the porcelain in place. The usual central electrode appears at 7.

In accordance with the preferred application of the invention, I protect the surface of the rib and the adjoining surface of the upper and lower end portions of the porcelain so that when the glazing liquid is sprayed thereon an unglazed belt, wide enough to extend from some distance below the shoulder 2 to some distance above the flange 5, is retained, thereby eliminating contact between the metal shell or retaining elements and the glaze. The actual construction may of course be varied but the unglazed gap or gaps should be interposed between the shell and both the upper and the lower end of the electrode.

In the subjoined claims, I use the expression "shell structure" in a sense such as to include both a one-piece shell such as shown and a shell built up from two or more members or elements.

I claim:

1. A spark plug including a shell structure, a glazed porcelain, retaining means carried by said shell structure for engaging the porcelain, an electrode passing through the porcelain and projecting at each end thereof, there being an unglazed portion between the retaining means and each end of said porcelain to more completely break electrical connection between the shell and both ends of the electrode.

2. A spark plug including a shell structure, a glazed porcelain, an electrode passing through the porcelain and projecting at each end thereof, the end portions of the porcelain being glazed throughout the greater part of their length, and the intermediate portion of the porcelain being unglazed over a wide belt wherein it contacts with the shell structure and retaining means carried by said shell structure for engaging the unglazed portion only of said porcelain.

3. A spark plug porcelain pierced from end to end to receive a central electrode and having a circumferential rib intermediate its length, said rib being unglazed over its peripheral and end surfaces, and the porce-

lain being otherwise glazed substantially throughout its entire outer surface, said unglazed surfaces being adapted to prevent the contact of the retaining means with said glazed surfaces, when in use.

4. A porcelain insulator for spark plugs having an aperture to receive an electrode, said insulator having its end portions glazed and having an unglazed portion between its ends, said unglazed portion being adapted to be engaged by retaining means and to pre-

vent the contact of the latter with said glazed portions.

5. In a device of the class described, a porcelain insulator provided with means for receiving an electrical conductor and having glazed and unglazed portions thereon, and a support for said insulator engaging said unglazed portion only.

In testimony whereof I affix my signature.

TAINÉ G. McDOUGAL.