A. J. CHAMPION.

SPARK PLUG.

APPLICATION FILED JULY 13, 1917.

1,298,888. Patented Apr. 1, 1919.

Fig. 2.

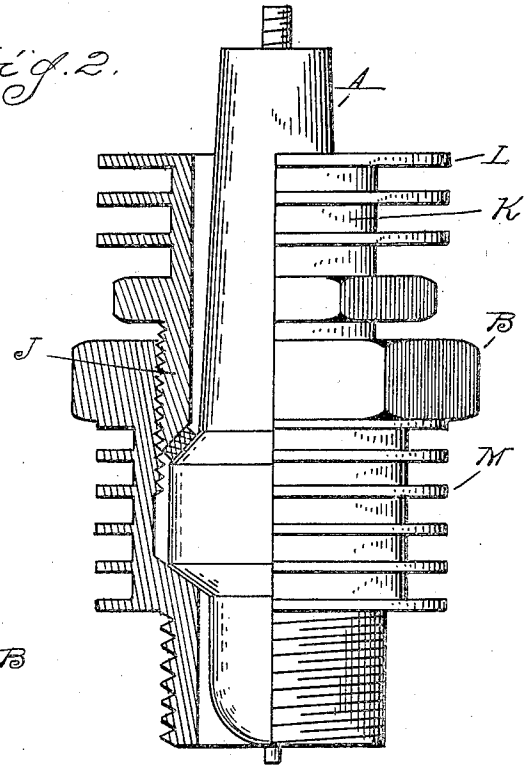
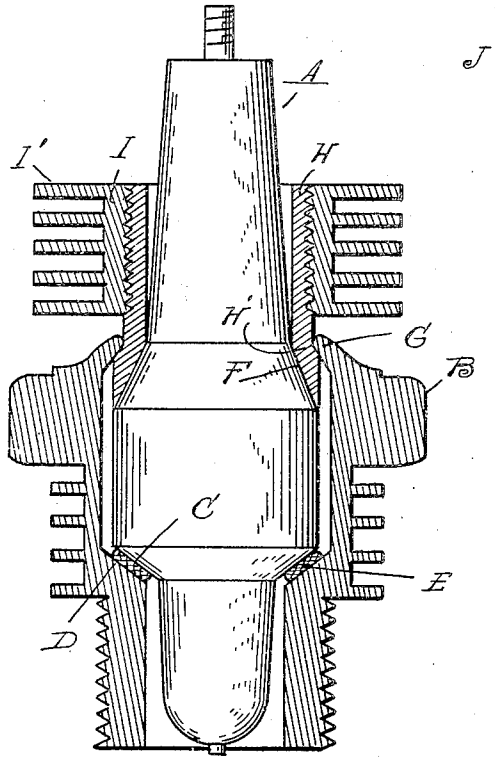


Fig. 1.



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UNITED STATES PATENT OFFICE.

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SPARK-PLUG.

1,298,888. Specification of Letters Patent. Patented Apr. 1, 1919.

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To all whom it may concern:

Be it known that I, ALBERT J. CHAMPION, a citizen of the Republic of France, 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.

The invention relates to spark-plugs and has for its object the more rapid dissipation of heat from the insulator. In the present state of the art it is usual to retain the insulator within the metallic housing by clamping the same between opposed bearings. With certain constructions this clamping is effected by means of a threaded bushing engaging the main casing, while with other construction a flange on the main casing is turned in to bear on the insulator. With each construction the insulator contacts with the case at two points, first, the seat at the inner end which forms the gas-tight seal; and second, an outer bearing where the clamping pressure is applied. Consequently the heat of the insulator can be transmitted by conduction only through one or the other of these two bearings. The outer casing of the plug is cooled chiefly through contact with the engine casing and any heat transmitted therethrough from the insulator must be dissipated in this way. This manner of dissipation is too slow for the proper cooling of the insulator where plugs are used with high-speed engines, and many of the difficulties that are encountered are due to too high a degree of heat in the insulator. With my present invention I have greatly increased the rate of heat dissipation,—first, by utilizing a member in direct contact with the insulator for receiving the heat by conduction; and second, by dissipating the heat from this member through properly-arranged radiating surface. Various specific construction may be devised embodying the same principle, but in the drawings I have illustrated two specific forms, in which—

Figure 1 is a sectional elevation of one form of plug; and

Fig. 2 is a similar view of a modified construction.

A is the insulator of the spark-plug, and B is the outer casing therefor. With the construction shown in Fig. 1, the insulator has a shoulder C which is seated upon the bearing D in the casing, a suitable gasket E being interposed therebetween to form a gas-tight seal. F is an opposed shoulder on the insulator to which the clamping pressure is applied by turning inward a flange G on the casing, this operation being preferably performed while the metal is hot.

To facilitate the dissipation of heat the member for clamping the insulator is extended outward and is provided with radiating surface. As shown in Fig. 1, H is the contacting member which is interposed between the shoulder F and the flange G and is also provided with an outwardly-extending portion H′, which is threaded to receive a member I having radiating fins I′. Thus the heat which passes directly by conduction from the insulator into the member H will be conducted outward through the extension H′ and into the member I where the extended radiating surface I′ will cause rapid dissipation.

With the construction shown in Fig. 2, in place of the flange G a threaded bushing J is engaged with the casing B to provide the clamping pressure on the insulator. This bushing is provided with an outwardly-extending portion K having radiating fins L thereon, and consequently the heat which is directly conducted from the insulator to the bushing will flow outward into the fins L and will be dissipated. If desired, the body of the casing B may be also provided with radiating fins M, as shown, so as to assist in the heat disssipation.

If desired, a gasket, such as shown in Fig. 2, can be applied to the construction shown in Fig. 1.

What I claim as my invention is:

In a spark plug, the combination with a casing and an insulator seated therein, provided with an inclined shoulder and with an outwardly-extending portion, of means for applying a clamping pressure to said inclined shoulder, including a member in heat conducting contact therewith, having an outward extension, said member being spaced from said outwardly-extending portion of the insulator, and radiating fins on said outward extension.

In testimony whereof I affix my signature.

ALBERT J. CHAMPION.