

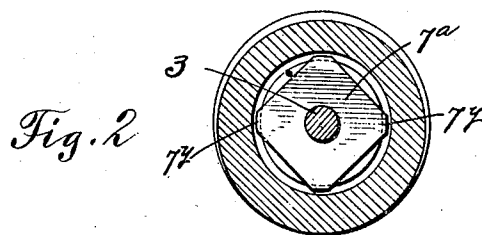
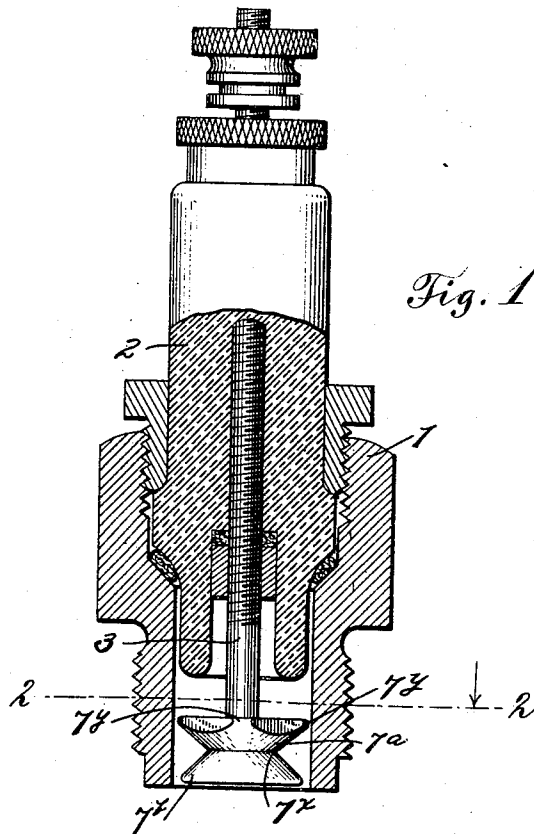
H. E. MAHER.

SPARK PLUG.

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1,007,466.

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WITNESSES:

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HARRY ELLSWORTH MAHER, OF DEVILS LAKE, NORTH DAKOTA.

SPARK-PLUG.

1,007,466.

Specification of Letters Patent.

Patented Oct. 31, 1911.

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To all whom it may concern:

Be it known that I, HARRY ELLSWORTH MAHER, a citizen of the United States, residing at Devils Lake, in the county of Ramsey and State of North Dakota, have invented certain new and useful Improvements in Spark-Plugs, of which the following is a specification.

In my Letters Patent No. 983,737, issued February 7, 1911, I have described a special form of spark plug so constructed as to obtain certain advantages from the standpoint of self-cleaning action, and also constructed with a view to insuring the efficiency of the device in effecting the desired firing of the explosive charge.

The improvements hereinafter described are designed to modify the form of the inner electrode of the spark plug with certain resultant advantages hereinafter more clearly set forth.

For a full understanding of the present invention, reference is to be had to the following detail description and to the accompanying drawings, wherein—

Figure 1 is a sectional view of a spark plug embodying the invention, and Fig. 2 is a horizontal section taken about on the line 2—2 of Fig. 1, looking downwardly.

Throughout the following description and on the several figures of the drawings, similar parts are referred to by like reference characters.

The general construction and arrangement of the parts of my plug are substantially the same as in my patented device heretofore referred to, the detachable shell or casing 1 being utilized as the outer electrode and receiving therein the insulating core 2 by which the inner electrode 7^x is supported. The electrode 7^x is carried by the electrode rod 3 in the customary manner, being secured thereto in any substantial way. In the present construction of the electrode 7^x, spaced flanges 7^a and 7^b are employed as heretofore, but while the flange 7^b is of circular formation, the flange 7^a is of oblong or substantially square formation, whereby a plurality of spark points 7^v are secured and located at the extremities of flattened portions of the flange 7^a. The spark points 7^v are spaced closer to the casing or shell 1 than the periphery of the flange 7^b, such construction providing a plurality of spark gaps between the parts 7^v and the part 1.

In the ordinary operation of the modified form of electrode 7^x hereinbefore set forth, the flange 7^b provides a spark gap, in its relation to the part 1, which acts auxiliary to the several spark gaps adjacent to the points 7^v of the flange 7^a. Said flange 7^b also acts as a baffle to keep the oil from entering the firing chamber of the plug. The sparks ordinarily jump the gaps between the points 7^v and the shell 1 and the ignition of the compressed gas in the inclosed firing chamber causes the exploded gases to expand in the V-shaped groove between the flanges 7^a and 7^b. The passage of the exploded gases from the shell 1 is retarded by the flange 7^b, thereby raising the pressure of the exploded charge in the firing chamber of the plug so that the gases pass out at a very high velocity carrying with them deposits of oil, soot, or other foreign matter lodging between the flange 7^b and the casing or shell 1. If the sparks should fail to cross the gaps between the points 7^v and the casing 1, the auxiliary gap between the flange 7^b and the casing 1 insures the proper sparking and ignition of the gases to obtain the best results, and the explosion has a tendency to draw the foul gases out of the casing 1 past the gap at the flange 7^b, subserving the self-cleaning operation of the device.

By the use of the invention, the explosive charge mixes more quickly on ignition, causing a higher pressure of the explosion in the cylinder and increasing the power derived from the explosion five or ten per cent. By making the quick ignition, a weaker mixture of hydrocarbon may be used affording a saving in running expenses and allowing the engine to run cooler with a weaker mixture. The explosion of the gases at the points 7^v of the electrode 7^x, in the ordinary operation of the plug, has also a tendency to direct the exploded gases along the flat edge portions of the flange 7^a tending to maintain the gaps between the points 7^v and the casing in unclogged condition, under which circumstances the points 7^v have a certain amount of coöperation to secure the desired results.

Having thus described my invention, what is claimed as new is:

1. In a spark plug, the combination of co-acting electrodes, one of said electrodes comprising a body formed with spaced flanges, one of said flanges being of substantially circular form and the other being of

oblong form to provide a plurality of spark points arranged in spaced relation to the first mentioned flange.

2. In a spark plug, the combination of an
5 outer casing, an inner electrode arranged at the inner end of said casing and surrounded thereby, said electrode comprising a body formed with an annular groove providing spaced flanges, one of said flanges
10 being round and the other being of somewhat oblong formation providing a plu-

ality of spaced spark points, said spark points being spaced closer to the casing than the periphery of the round flange for the purpose specified.

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

HARRY ELLSWORTH MAHER.

Witnesses:

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