May 5, 1925. 1,536,628

C. J. REED

SPARK GAP MECHANISM

Filed Feb. 28, 1921

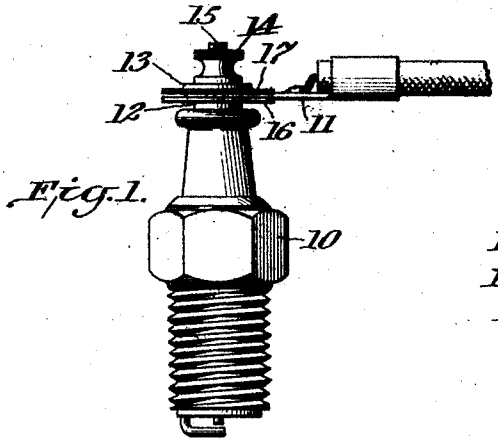


Fig. 1.

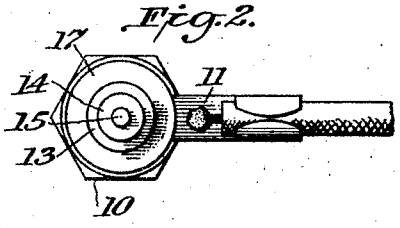


Fig. 2.

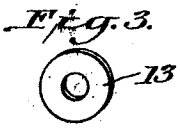


Fig. 3.

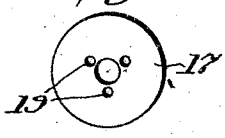


Fig. 4.

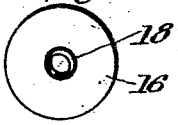


Fig. 5.

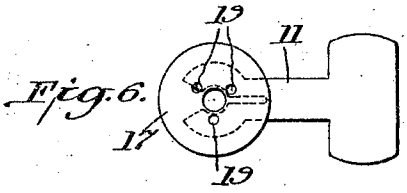


Fig. 6.

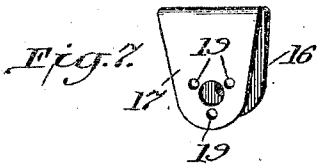


Fig. 7.



Fig. 8.

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Patented May 5, 1925. 1,536,628

UNITED STATES PATENT OFFICE.

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SPARK-GAP MECHANISM.

Application filed February 28, 1921. Serial No. 448,664.

To all whom it may concern:

Be it known that I, CHARLES J. REED, a citizen of the United States, residing at San Mateo, in the county of San Mateo and State of California, have invented certain new and useful Improvements in Spark-Gap Mechanism, of which the following is a specification.

My invention relates to an improved spark gap mechanism and is particularly applicable to electric circuits used for the ignition of gaseous mixtures in internal combustion engines.

In the past many devices of this character have been proposed. The general object of this invention is to provide a spark gap mechanism of exceedingly simple construction and low cost of manufacture and another object is to provide a mechanism which may be readily applied to an ordinary spark plug without materially changing the latter or the connection to it.

Reference is had to the accompanying drawings which form a part of the specification and in which

Fig. 1 is an elevation of a spark plug and connecting wire, embodying the invention;

Fig. 2 is a plan view thereof;

Figs. 3, 4 and 5 are perspective views of elements forming part of the construction shown in Figs. 1 and 2;

Fig. 6 is a plan view showing the essential relationship of the parts forming the invention; and

Figs. 7 and 8 are perspective view and elevation, respectively, of a modified form of the principal part of the invention.

In Figs. 1 and 2, 10 represents an ordinary form of spark plug and 11 an ordinary form of connector for establishing electrical connection from a source of current to the spark plug.

Ordinarily the terminal or connector 11 is firmly clamped between the contact surface 12 and a metallic washer 13 of the binding post of the plug by means of a knurled nut 14 and it is not material whether the perforation in the terminal 11 through which the screw-threaded stem 15 passes closely fits the stem 15 or not.

In order to apply my invention I make this perforation of such size that an annular gap may be formed between the stem 15 and the edge of the terminal surrounding it, as clearly indicated in Fig. 6.

The invention comprises as essential elements a washer 16 and a washer 17, both of insulating material, between which the terminal is received. The washer 16 has a raised portion 18 adjacent its opening adapted to take up the space between the stud 15 and the terminal 11 and to thereby permanently space the latter from the former.

When the terminal 11 is thus clamped between the washers 16 and 17, a permanent gap is formed in the circuit in series with the main spark gap at the bottom of the plug.

It is understood that the washers 16 and 17 may have slots extending inwardly from the outer edge similar to the slot in the terminal 11.

To allow the spark to take a definite path, various provisions may be made. As indicated in Figs. 4, 6 and 7, the upper washer 17 may be provided with an opening or openings 19. In the particular instance there are three openings to make sure that at least one opening is positioned between the metal of the terminal 11 and the washer 13. The washer 17 has a thickness corresponding to the length of the gap to be formed between the terminal 11 and the washer 13. In practice this thickness is small since the spark is to take place between flat surfaces.

However, a small recess could be made in the portion 18 allowing the spark to jump directly from a point on the peripheral edge of the terminal 11 to the stem 15.

The form of device shown in Figs. 7 and 8 differs from the form above described merely in that the two insulating washers are formed in one piece and folded upon themselves.

In the claims the term "binding post" does not refer only to a binding post of the usual kind, but includes any stem-like element whether it is part of another structure or not.

I claim:

1. In a spark-gap mechanism, the combination of two thin washers of insulating material, one of the washers having a turned-up inner edge portion and one of the washers having a perforation intermediate the inner edge and the periphery.

2. In a spark-gap mechanism, the combination of two thin insulating washers, one of the washers having a perforation intermediate the inner edge and the periphery

and the inner edge portion of one of the washers extending out of the plane of the washer substantially at right angle thereto.

3. A spark-gap mechanism comprising the terminals of an electric circuit, one being a fixed binding post, the other a flattened conducting strip clamped between two sheets of insulating material, by which it is held in close proximity to, but insulated from the binding post, said two insulating sheets and said conducting strip being in the form of collars to the binding post, one of said insulating sheets being perforated to allow passage of an electric spark.

In testimony whereof, I affix my signature.

CHARLES J. REED.