May 10, 1932. M. PASCO 1,857,739

SPARK PLUG

Filed May 1, 1930

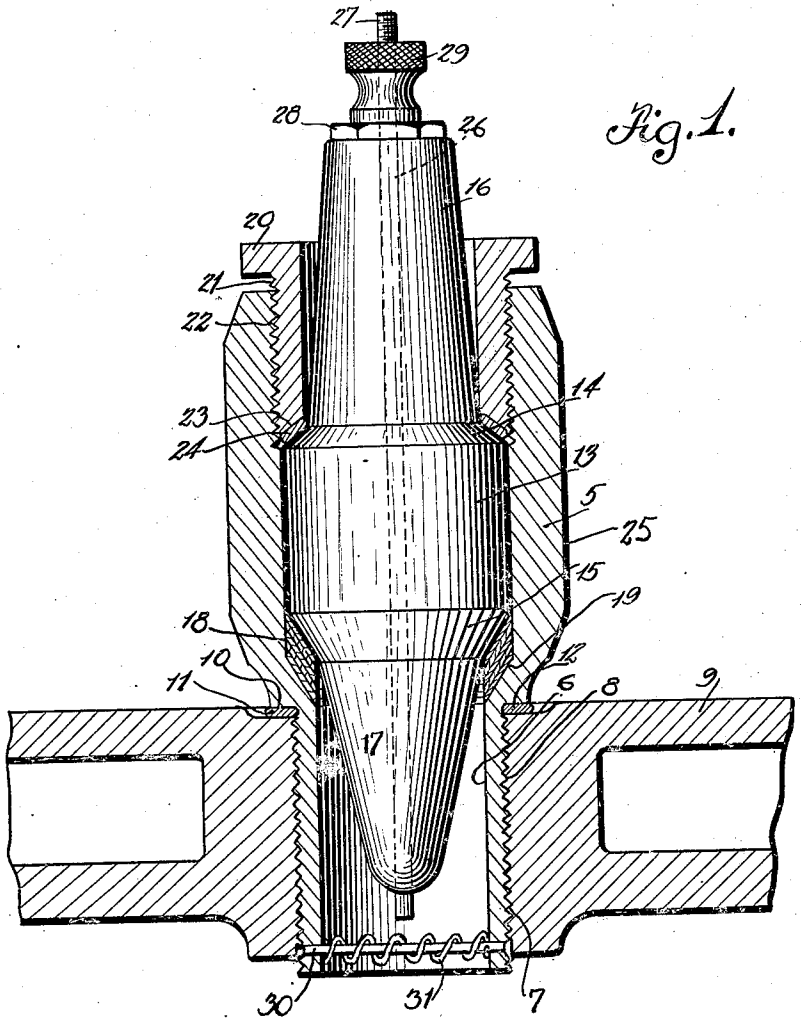

Fig. 1.

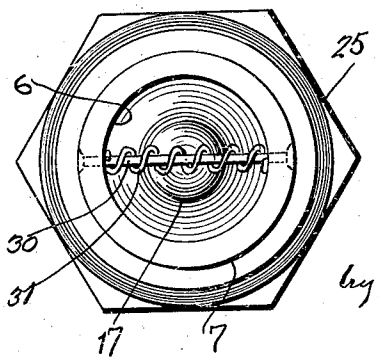

Fig. 2.

Inventor
Michael Pasco.

by Bryant & Lowry.

Attorneys

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MICHAEL PASCO, OF SACRAMENTO, CALIFORNIA

SPARK PLUG

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This invention relates to spark plugs of the type employed in the ignition system of internal combustion engines.

The primary object of this invention, is to provide an improved spark plug of the above mentioned character in which one of the electrodes is formed with a metal coiled spring adapted to rotate and present a new face to the spark contact upon rotation of the same.

A still further object of this invention, is to provide a spark plug of the above mentioned character having two sparking electrodes which may be moved toward or away from one another to allow for adjusting the distance between the spark and the electrode.

A still further object of this invention, is to provide a unitary structure having comparatively few parts and which will not get out of working order.

Heretofore, it has been common practice to manufacture spark plugs for internal combustion engines, with a pair of electrodes both being stationary relative to the spark plug and both being subject to carbon deposits and the like created by oil pumping past the internal combustion engine cylinders. This practice is objectionable, due to the fact that the spark plugs have to be removed at time intervals in order to clean the carbon deposits from both electrodes of the plug for efficient operation of the internal combustion engine.

The above objects and disadvantages are overcome by providing a structure in a spark plug of the character described herein wherein one of the electrodes is formed of a coil spring which is rotated from the explosion charges in the internal combustion engine cylinder and to compensate for wear of the coil spring and the other electrode, means is provided for adjusting the same without removing the plug from the cylinder. It will be readily observed that a spark plug constructed in accordance with the present invention will function under abnormal conditions such as poor explosive charges and oil soaked contacts.

Other objects and advantages of the invention will become apparent during the course of the following description, forming a part of this specification and in which,

Figure 1 is a vertical cross-sectional view of the spark plug showing the same inserted into a cylinder head and showing the arrangement of the electrodes relative to the casing of the spark plug; and

Figure 2 is a bottom plan view of the spark plug illustrating the relation of the adjustable contact to the rotary electrode.

For a consideration of the detailed structure of the invention, attention is directed to the drawings, wherein the reference character 5 will generally be employed to designate a casing formed cylindrical and having the opposite ends thereof open. The lower end of the casing 5 is reduced as at 6 and is provided with screw threads 7 for being received in the corresponding screw threads 8 of the cylinder head 9. At the beginning of the reduced portion 6 is a seat 10 for engaging a washer 11 in the manner usually employed for holding spark plugs against compression leaks in cylinder heads. A packing 12 may be provided between the seats 10 and the recess portion of the cylinder head as illustrated in Figure 1.

A porcelain electrode holder 13 is contained within the cylindrical casing 5 and is provided with beveled portions 14 and 15 which extend inwardly from the electrode holder 13 and taper into reduced ends 16 and 17. The bevel portion 15 is adapted to be supported by a series of shims 18 resting upon the cut-away portion 19 of the casing 5 whereby the electrode holder 13 may be adjusted vertically, by removing one of the shims 19 or by replacing the number of shims between the seat 19 and the bevel portion 15 of the electrode holder 13.

A screw threaded thimble 20 having screw threads 21 is received in the upper end of the cylindrical casing 5 by corresponding screw threads 22 and the lower end of the screw threaded thimble 20 is beveled as at 23 for engaging the washer 24 interposed between the bevel plate 14 and the beveled edge 23 of the screw threaded thimble 20.

The upper end of the screw threaded nipple 20 may be formed hexagonal to receive a

thread as may be the case in connection with the cylindrical casing 5 as illustrated in Figure 2 wherein the sides 25 are formed flat for engaging a wrench whereby the cylindrical casing may be inserted or removed from the cylinder head 9.

The electrode holder 13 is provided with a metallic electrode 26 molded in place and extending longitudinally through the electrode holder in order that the lower end of the electrode 26 may extend below the bottom tapered portion 17 of the electrode holder 13. The electrode holder is formed of a porcelain material in order to insulate the electrode 26 from the casing 5. Screw threads 27 are formed on the upper end of the electrode 26 while a retaining nut 28 and binding nut 29 are threaded thereon.

In opposite portions of the reduced end 6 of the casing 5 is a pin 30 which has its opposite ends received in openings in the above mentioned opposite portion of the casing. The pin 30 is formed of a heat resisting metal and is round in cross-section to allow the coil spring 31 which is rotatably mounted thereon to freely engage the pin 31. It will be noted that the end of the electrode 26 is in close proximity to the helical coil spring 31 whereby the convolutions of the same may form a spark engaging face for the electrode 26. This coil spring 31 has the property of heating almost instantly thereby burning any oil vapor which may leak by the rings.

It will be readily observed that explosion force in the cylinder of the internal combustion engine in which the spark plug is inserted will cause the loosely mounted helical spring 31 to be partially rotated and at all times present a new face to the electrode 26. This construction allows the firing of the spark plug under abnormal conditions such as is caused by the loose piston rings allowing the passage of oil into the upper portion of the cylinder and around the spark plug contact.

It is to be understood that various changes in the shape, size and arrangement of the invention may be resorted to without departing from the spirit of the invention, or the scope of the subjoined claim.

Having thus described the invention, what is claimed is:—

A spark plug comprising a cylindrical casing having a longitudinal opening extending therethrough, a porcelain electrode holder received in the casing, an electrode extending through the center of the electrode holder, a pin mounted transversely in the lower portion of the casing inwardly of the end thereof, and a coil spring freely rotatable upon said pin entirely within the end of the casing.

In testimony whereof I affix my signature.

MICHAEL PASCO.