C. O. BLEE.

SPARK PLUG.

APPLICATION FILED DEC. 22, 1919

1,410,646. Patented Mar. 28, 1922.

Fig. 1.

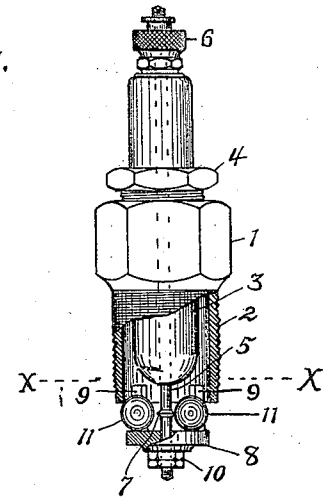
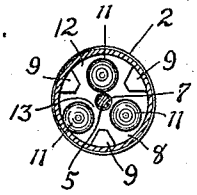


Fig. 2.



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BY

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UNITED STATES PATENT OFFICE.

CHARLES O. BLEE, OF FORT WAYNE, INDIANA.

SPARK PLUG.

1,410,646. Specification of Letters Patent. Patented Mar. 28, 1922.

Application filed December 22, 1919. Serial No. 346,739.

To all whom it may concern:

Be it known that I, CHARLES O. BLEE, a citizen of the United States of America, and resident of Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Spark Plugs, of which the following is a specification.

This invention relates to improvements in spark plugs for internal combustion engines, of the self-cleaning type, and the object thereof is to provide a spark plug of its class so constructed that a portion of each of its electrodes will present a sharp bared edge kept free from deposits of carbon by loose conducting members to facilitate the passage of current between the electrodes.

The object of the invention is accomplished by the construction illustrated in the accompanying drawings in which:

Fig. 1 is an elevation partially broken away and in section and showing the invention; and

Fig. 2 is a tranverse section of Fig. 1 on the line *x—x* thereof.

Similar characters of reference indicate corresponding parts in both views and having reference now to the same:

1 is a plug having a sleeve 2 adapted to extend through the cylinder into the combustion chamber of a gas engine. In the plug is held an insulator 3 by means of a threaded sleeve-nut 4. An electrode 5 extends longitudinally through the insulator 3 and is supported thereby. The usual means 6 on the extending upper end of the electrode is provided for making electrical connection with a source of energy. The lower extending portion of the electrode 5 has a sharp edged upset 7, and a circular plate 8 of insulating material, having a series of upwardly extending fingers 9, is adjustably supported upon the lower extremity of the electrode 5 and is secured thereto by the jam-nuts 10. Upon the plate are loosely positioned a series of conducting members 11 that lie between the electrodes and in the spaces 12 between the fingers 9 respectively. The loose conductors are metallic and spherical in form, and are adapted to roll upon the plate in the corresponding spaces between the fingers and bear against the sharp edge of the upset, or the lower inner edge of the sleeve 2 as they become shifted about upon the plate because of the vibration of the engine or the shocks of exploding fuel. Each loose conductor is so proportioned that when it is in contact with the electrode 2 a spark gap 13 is left between it and the upset on the electrode 5, and vice-versa. This gap may be widened or reduced by adjustably raising or lowering the plate 8 upon which the loose conductors are supported.

In the operation of the device the sleeve 2 forming one of the electrodes is grounded as usual in the cylinder head of the engine and the other electrode is connected up in the ordinary manner with a proper source of electrical energy. Sparks are formed as the current jumps across the gap between one electrode and one of the loose conductors as it lies in contact with the other electrode.

An especial feature of the invention is the construction by which each of the electrodes presents a sharp edge to the contacting surface of the loose conductors, which more readily responds to the cleaning effect due to the impingement of the loose members against the sharp edges, the effect being that the sharp edges are worn free from the products of combustion that tend to become deposited thereon. Thus, both of the electrodes have constantly exposed bared metal edges which facilitate the passage of current from one electrode across the gap to the loose conductor as well as from the conductor to the other electrode in intimate contact therewith. The loose conductors, intervening between the electrodes, in rolling about upon the plate and impinging against the sharp exposed edges of the conductors and against the fingers that separate them are liberated from any deposits that may form upon their surfaces and hinder the passage of electrical current.

What I claim is:—

1. In a spark plug, a plug proper having a sleeve forming an electrode; an insulator supported in the plug; another electrode extending longitudinally through the insulator and projecting centrally through the sleeve; a supporting plate mounted upon the projecting end of the central electrode and having an annular series of upwardly projecting fingers, there being a corresponding series of spaces between the fingers; and a loose spherical conducting member supported by the plate in each of said spaces and being adapted to come into contact with either of said electrodes while supported upon the plate.

2. In a device of the class described, a plug having two electrodes each of which presents a sharp annular contact edge in opposite relation to the other electrode; and one or more loose conducting members in supported relation to the electrodes so as to impinge while supported against the sharp contact edge of either electrode.

3. In a device of the class described, a plug having two electrodes one of which is in the form of a sleeve and the other in the form of a rod that extends centrally within the sleeve, the latter having an upset forming an annular projection thereon; a supporting member on the latter electrode; and one or more loose conducting members on the support and being adapted to impinge against the upset of the central electrode or against the other electrode while supported by the supporting member.

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

CHARLES O. BLEE.

Witnesses:
ROBERT W. BURNS,
MATILDA METTLER.