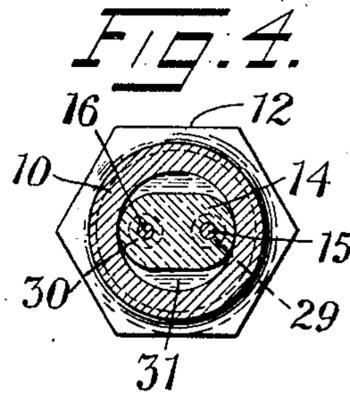
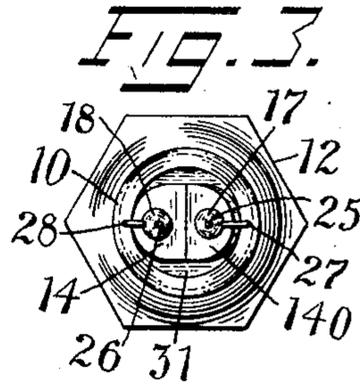
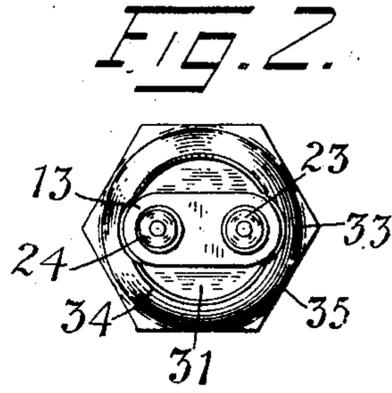
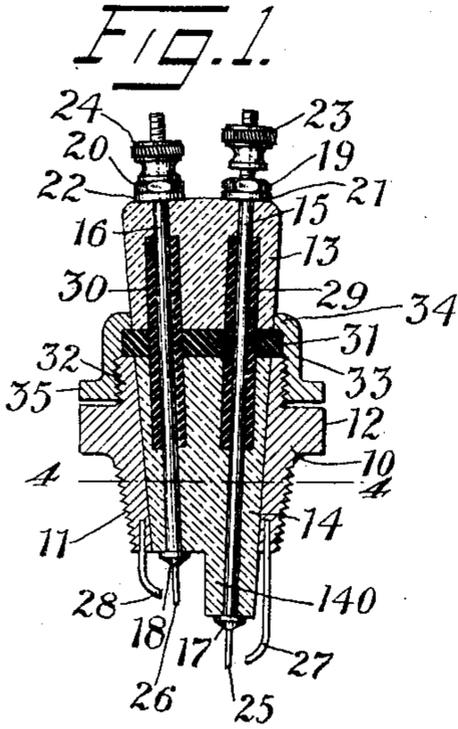


No. 889,338.

PATENTED JUNE 2, 1908.

G. J. SCHULTZ.
IGNITER.

APPLICATION FILED FEB. 26, 1907.



Witnesses

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GEORGE J. SCHULTZ, OF NEW YORK, N. Y., ASSIGNOR TO BENJAMIN BRISCOE, OF TARRY-TOWN, NEW YORK.

IGNITER.

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Specification of Letters Patent.

Patented June 2, 1908.

Application filed February 26, 1907. Serial No. 359,422.

To all whom it may concern:

Be it known that I, GEORGE J. SCHULTZ, a citizen of the United States, residing in the borough of Brooklyn, New York city, in the county of Kings and State of New York, have invented certain new and useful Improvements in Igniters, of which the following is a specification.

This invention relates to igniters or spark plugs such as are commonly used in connection with internal combustion engines, and its object is to provide in a single structure a set of sparking points for the magneto current and a set of sparking points for the battery current.

In the use of internal combustion engines it has been found desirable to employ a battery for supplying the ignition sparks at the time the engine is being started and also at periods when it is required to run very slowly, and for the purpose of economy and to prevent exhausting the batteries to employ a magneto driven by some operative part of the engine for giving the ignition sparks while the engine is running under normal conditions.

In the manner in which certain forms of engines, particularly automobile engines, are constructed, it is inconvenient to have more than one spark plug or igniter opening into the cylinder, and consequently when it is desired to employ current from two sources it has been found inconvenient to properly arrange the sparking points; but by the present improvement an igniter having two sets of sparking points, which may be applied to the ordinary opening in the cylinder for the igniter, is made possible. Not only is it made possible, but it is a practicable working device, as experience has demonstrated.

In the drawings accompanying and forming part of this specification Figure 1 represents a central longitudinal section of a form of igniter equipped with my present improvement. Fig. 2 is a top plan view thereof. Fig. 3 is a bottom view thereof; that is, Fig. 2 is looking at the device toward the binding screws, and Fig. 3 is looking at the device toward the sparking points; and Fig. 4 is a section taken on a plane at about the line 4—4 Fig. 1 looking upwardly.

The smallness of the engine cylinders and the compactness of the structure, together with the large number of attachments, leave

but very little room for the ignition device, and this has brought into requisition the greatest skill and ingenuity to produce a small and compact device which is so constructed that there will be no leakage from one of the conductors of the electrical current to the other. The nearness together of these conductors, owing to the compactness of the device has required the principal amount of ingenuity to be expended in the insulation, and to prevent leakage between the parts which carry the sparking points.

The device illustrated in Fig. 1 of the present drawings is shown as having a shell 10, which will preferably be made out of metal and have a screw threaded end 11 for engaging an opening in the engine cylinder or ignition chamber, and a squared head 12 for the engagement of a wrench by which it may be screwed into such opening. The inner portion of the shell is shown as tapering downwardly, that is, the small end of the tapered opening is at the portion which will go into the opening in the ignition chamber. The insulation member in the present instance is shown as made up of two tapering bodies, which may be porcelain, 13 and 14. The lower end of portion 14 is shown as the smallest and seated within the shell 10. These insulation bodies 13 and 14 have two openings extending longitudinally through them in which are seated a pair of conductor rods 15 and 16 having head portions 17 and 18 which are held in position by means of set screws 19 and 20 and washers 21 and 22. The upper ends of these conductor bars are screw threaded and provided with binding-screw thumb-nuts 23 and 24, respectively, which will be connected to the terminal wires of a magneto run by some portion of the engine and an electric battery, either primary or secondary, as the case may be. The conducting rod 15 is shown as carrying a sparking point 25 for cooperation with the sparking point 27 which is driven into the shell 10, and the conducting rod 16 is shown as carrying a sparking point 26 cooperative with a sparking point 28 driven into the shell. The openings through which the conducting rods 15 and 16 pass are chambered out in the central portion and adjacent to the meeting edges of the bodies 13 and 14, and the rods are there surrounded by some insulating material 29 and 30, which may be different from

the insulating material of which the bodies 13 and 14 are composed, for instance, the bodies 13 and 14 may be made of some ceramic material, as for instance porcelain, and the bodies 29 and 30 may be made of some insulating material, such for instance as mica.

By reference to Figs. 2, 3 and 4 it will be seen that the bodies 13 and 14 may be flattened and their smaller diameter may be considerably less than the diameter of the opening through the shell 10. Between the meeting ends of the bodies 13 and 14 there is imposed a disk 31 of some non-conducting material, which it may be found convenient to have of a translucent nature, as for instance mica to permit the action of the plugs to be visible. This feature is broadly described and claimed in my application for U. S. Patent filed January 24, 1907, Serial No. 353,770. In such copending application I have described the advantages ensuing from having translucent material immediately adjacent to the sparking points so that their action may at all times be observed; and in the present instance where two sources of electrical energy are employed for producing the sparks, one at one time and another at another time, as the operator may elect, it will be found highly advantageous to permit their action to be observed from a single point of observation and through a single window, as it were. The insulation device will be held in the shell 10 by having the disk 31 of larger radius than the largest radius of the bodies 13 and 14 where these come together, and this disk may rest upon the top of an upstanding flange 32 on the shell, which flange may be screw threaded for receiving the screw threaded portion of a screw collar 33 which has an inturned flange 34 for engaging the flange 31 and clamping it down upon the end 32 of the shell. The collar may have a wrench engaging portion 35 for facilitating its operation and for permitting the ready removal of the insulating device and the points carried thereby when it is desired to take these out for the purpose of cleaning.

To assist the insulation in preventing leaking and prevent one of the currents grounding upon the other the body 14 at its lower end is shown as extended, as at 140, at a distance beyond the end of the sparking point 26. This will serve to insure the entire insu-

lation of the parts, that is, insulating one circuit from the other circuit. 55

It will be seen that each of the spark points 25—26 is carried eccentrically of the opening in the shell 10 and that a rotation of the insulation body within the shell will effect an adjustment of the sparking points 25—26 relative to their cooperative points 27—28 for adjustably increasing and decreasing the spark gap, and it will produce a like adjustment of both such gaps simultaneously. 60

Having described my invention I claim: 65

1. In an ignition device, the combination with a shell having a central opening and carrying a plurality of sparking points, a body of insulating material located within the opening of said shell but being of less area than said opening, sparking points carried by said insulating material for cooperation with the sparking points carried by the shell, said body of insulating material carrying a translucent flange of insulating material, and means for securing said flange to said shell. 70

2. In an ignition device, the combination with a shell, of a body of insulation located within said shell and having a portion extending substantially in line with the end of said shell, and a portion extending beyond said end, sparking points carried by said body of insulation material at each of said portions, and sparking points respectively cooperative with these carried by the shell. 80

3. The combination with a metallic shell, of a plurality of sparking points carried by the shell and occupying different planes longitudinally of the said shell, an insulation member located within said shell and having one portion of its end extending farther longitudinally of the shell than an adjacent portion, a sparking point carried by each of said portions of the said insulation member and occupying different planes longitudinally of the said member for cooperation with the respective sparking points carried by the shell, and means for connecting the sparking points carried by the insulation member with their respective electrical circuits. 85

Signed at Nos. 9—15 Murray st., New York, N. Y., this 23rd day of February, 1907. 100

GEORGE J. SCHULTZ

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