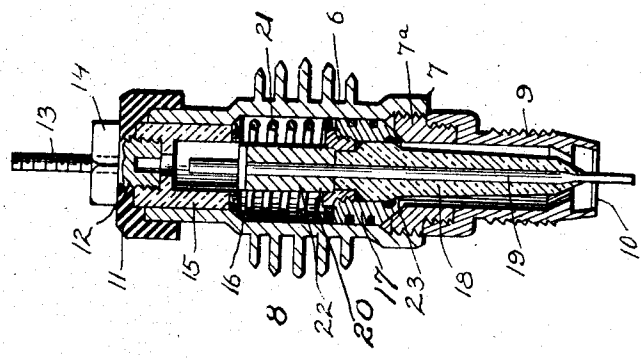
N. T. QUEVEDO.

SPARK PLUG.

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Witnesses

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SPARK-PLUG.

1,203,264. Specification of Letters Patent. Patented Oct. 31, 1916.

Application filed January 23, 1915. Serial No. 3,956.

To all whom it may concern:

Be it known that I, NARCISO T. QUEVEDO, a citizen of the United States, residing at Saugerties, in the county of Ulster and State of New York, have invented certain new and useful Improvements in Spark-Plugs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to ignition devices for internal combustion engines, and more particularly to a spark plug of the jump spark type.

The invention has for its object to provide a spark plug embodying pneumatically operable means to automatically open and close the circuit of a high tension electrical current, and thus eliminate the use of a timing mechanism.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts as will be hereinafter specifically described, claimed and illustrated in the accompanying drawing, in which the figure represents a longitudinal sectional view through a spark plug constructed in accordance with the invention.

Referring to the drawing in detail, the numeral 6 indicates a cylinder having one end 7 enlarged and of polygonal formation and provided with internal screwthreads fitting one end of a coupling member 7^a having its opposite end reduced and fitted into the internally screwthreaded end of the body 9 of the plug having external screwthreads adapted to fit in the opening provided in the cylinder of an internal combustion engine (not shown). The free end of the body 9 carries the relatively stationary electrode 10 and a cap 11 formed of insulating material is secured over the end of the cylinder 6 opposite the coupling member 7^a. The cylinder 6 is further provided with a plurality of external fins or flanges 8 for retaining it in a relatively cool condition and to prevent over-heating.

The cap 11 is formed with a concentric opening in which is secured a socket 12 having a reduced screwthreaded terminal or stem 13 projecting exteriorly of the cap 11 and secured to the latter by a nut 14. A sleeve 15 of porcelain, or other suitable insulating material, is snugly fitted in the end of the cylinder 6 and is interposed between the latter and the socket 12. A fiber gasket 16 of annular formation is secured against the inner extremity of the insulating sleeve 15.

A piston 17 is slidably mounted within the medial portion of the cylinder 6 and is provided with a central opening or bore receiving a porcelain insulator 18 formed with a longitudinal opening in which is secured the relatively movable electrode 19. The insulator 18 is secured in the piston 17 by an annular nut 20. A spring 21 is positioned within the cylinder 6 and is engaged at its opposite ends with the gasket 16 and the piston 17 and normally retains the latter in position adjacent the enlarged end 7 of the cylinder. In its normal position, as illustrated in Fig. 1, the electrode 19 is disposed in spaced relation to the socket 12 which is adapted to receive the inner extremity thereof and an insulator 22 is secured thereon and extends from the nut 20 to a point adjacent the end which is adapted to engage within the socket 12. The end of the piston 17 adjacent the coupling member 7^a is beveled, as indicated at 23, to cooperate with the correspondingly shaped end of the coupling member 7^a to provide a valve. As clearly illustrated in Fig. 1, the insulator 18 is spaced from the body 9 and the coupling member 7^a so as to permit the compressed gases from the engine cylinder to enter and exert pressure against the inner end of the piston 17.

In operation, the plug is positioned upon the cylinder of an engine (not shown) in the usual manner and is connected with a suitable source of high tension electric current. During the compression stroke of the gas engine the gases in the combustion chamber are compressed and exert pressure against the piston 17 and cause the latter to move toward the outer end of the cylinder 6 against the tension of the spring 21. It will be understood that the spring 21 is of adequate tension to resist the pressure in the cylinder of the engine up to a certain value or the maximum compression when the tension of the spring is overcome and the piston 17 is moved. When the piston is operated by the pressure of the gases in the en-

gine, the relatively movable electrode 19 is moved outwardly and the outer extremity thereof is engaged within the socket 12, thus completing the circuit and causing a spark to jump between the electrodes 10 and 19, which ignites the gas within the internal combustion engine resulting in the explosion. During the down or power stroke of the piston of the engine, the internal pressure is reduced and the tension of the spring 21 operating upon the piston 17 moves the relatively movable electrode 19 out of engagement with the socket 12 and thus breaks the circuit.

What I claim is:

1. A spark plug including a body, a cylinder connected with said body, an electrode carried by said body, a central electrode disposed within said body, and permanently spaced from the first-mentioned electrode, an insulating cap fitted over the end of said cylinder, a relatively stationary binding post secured to said cap, means movable with relation to said binding post to alternately establish and break an electrical connection with it and the central electrode, and means normally retaining said movable means in inoperative position.

2. In a spark plug, a longitudinally movable central electrode, a relatively stationary electrode disposed in permanently spaced relation to the central electrode, a stationary binding post, a hollow cylinder and a cap completely inclosing said electrode, and means movable with relation to said binding post to alternately establish and break an electrical connection with it and the central electrode and movable with the latter.

3. A spark plug including a cylinder, a body connected with one end of said cylinder, a binding post, insulating means connecting said binding post with the opposite end of said cylinder, a movable electrode disposed within said body and cylinder adapted to be electrically connected with said binding post, and a piston reciprocably mounted in said cylinder and connected with said electrode.

4. A spark plug including a cylinder, a body connected with one end of said cylinder, a binding post, insulating means connecting the opposite end of said cylinder with said binding post, a longitudinally movable central electrode disposed within said cylinder and said body, a piston reciprocably mounted in said cylinder and connected with said central electrode, and means normally retaining said piston and electrode in inoperative position.

5. A spark plug including a cylinder, a body secured to one end of said cylinder, a binding post, insulating means securing said binding post to the opposite end of said cylinder, a socket secured in said insulating means, a longitudinally movable central electrode adapted to engage in said socket, a piston reciprocably mounted in said cylinder and connected with said central electrode, and means normally retaining said piston and electrode in inoperative position.

6. In a spark plug, a pair of permanently spaced electrodes, a stationary binding post, and slidable means rigidly connected with one of said electrodes for operating the latter to alternately establish and break an electrical connection between the electrode and said binding post.

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

NARCISO T. QUEVEDO.

Witnesses:
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MARGARET E. QUEVEDO.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."