

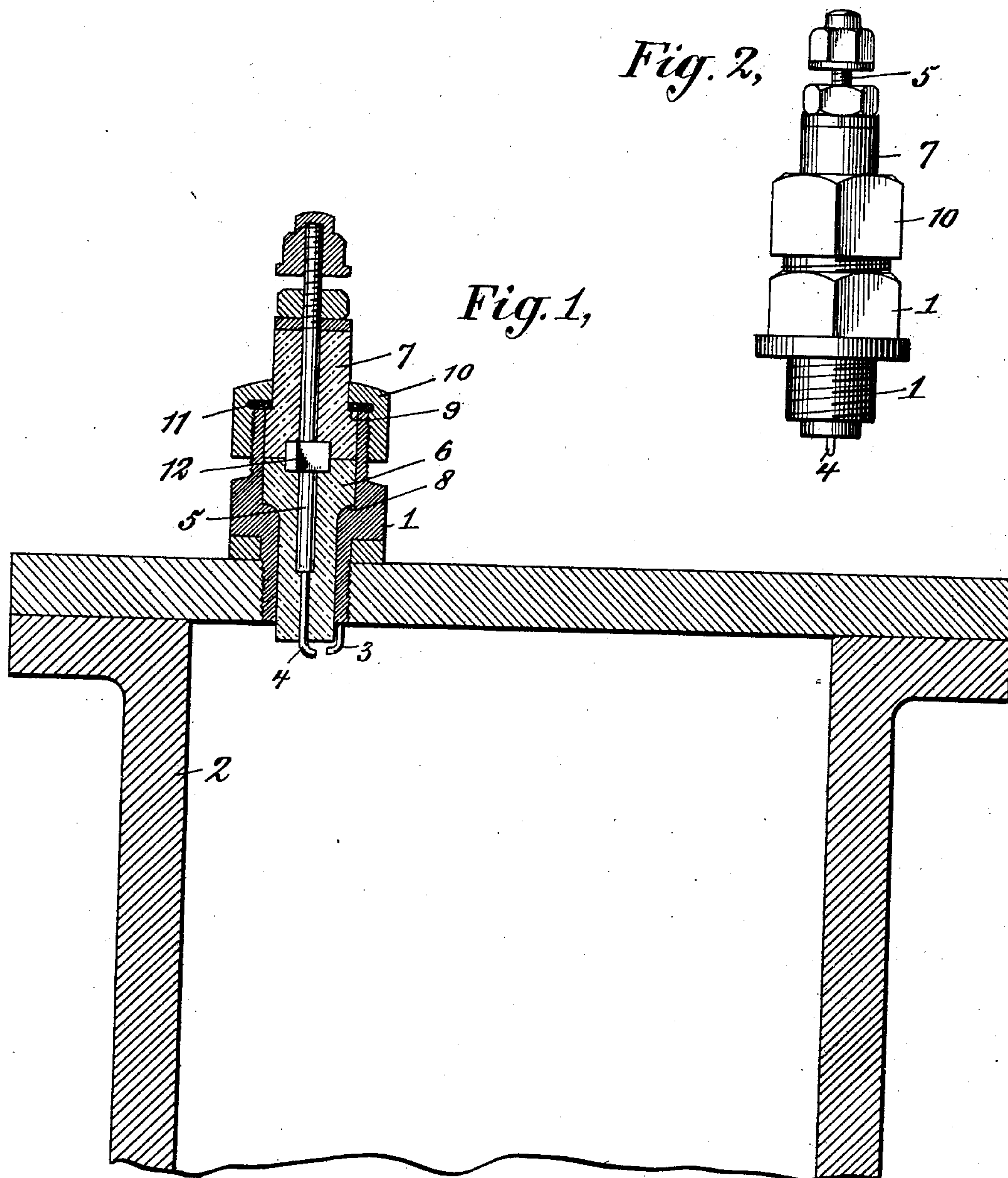
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Patented Nov. 18, 1902.

L. B. SMYSER.
SPARKER FOR GAS ENGINES.

(Application filed Jan. 29, 1900.)

(No Model.)



WITNESSES:

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SPARKER FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 714,049, dated November 18, 1902.

Application filed January 29, 1900. Serial No. 3,068. (No model.)

To all whom it may concern:

Be it known that I, LOUIS B. SMYSER, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Sparkers for Gas-Engines; 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
10 which it appertains to make and use the same.

My invention relates to improvements in igniting devices for gas, oil, and other explosive and internal-combustion engines, and relates more particularly to what is termed
15 the "sparker" of igniting devices of that type employing fixed electrodes and a separate circuit-breaking device external to the engine-cylinder. Such sparkers usually consist of a plug arranged to screw into the wall of the
20 engine-cylinder and carrying two electrodes or sparking terminals, one of which is insulated from the other and from the cylinder and frame of the engine by a porcelain or earthenware sleeve, within which it lies and
25 to which it is connected. The inner end of this sleeve is exposed to the intensely-hot gases in the engine-cylinder, while the outer end of the sleeve is exposed to the outer air. It has been found that owing to the great differences in the temperatures to which the ends
30 of the porcelain sleeve are subjected and also possibly to the difference between the rate of expansion of porcelain and of the metal of the conductor such sleeve soon breaks at or near
35 its center, permitting the conductor which it insulates to turn so as to vary the distance between the electrodes or sparking points. In order to overcome this difficulty, I divide my porcelain or earthenware insulating-bushing,
40 in the first instance, into two sections and provide means for holding the sections together firmly and for preventing them or the electrode they insulate from rotating in such manner as to increase or decrease the sparking gap. I also secure the insulated conductor
45 to the insulating-bushing at or near its center, leaving the ends free to expand and extend without straining the porcelain, and I further provide the said insulated conductor
50 with an integrally-formed enlargement or head and with a screw-threaded portion upon

which is a clamping-nut, by means of which the said head may be drawn up against the insulating-bushing, so as to hold the conductor in position firmly.

The object of my invention is to avoid the breaking of the insulating-sleeves of igniters and the derangement of the sparking points. This object is attained in the invention herein described, and illustrated in the drawings
55 which accompany and form a part of this specification, in which the same reference-numerals indicate the same or corresponding parts, and in which—

Figure 1 is a central longitudinal section
60 of a portion of an engine-cylinder and of my improved igniter-plug attached thereto, and Fig. 2 is an elevation of the igniter-plug.

The igniter or sparker consists of a metal bushing 1, adapted to be screwed into a suitable aperture in a wall of the engine-cylinder 2 and carrying one electrode or sparking point 3, formed of platinum or other suitable material. The other electrode or sparking point 4 consists of a terminal of platinum or
70 other suitable material electrically and mechanically connected to a conductor 5, inclosed within a two-part insulating-bushing, the sections of which are numbered 6 and 7, respectively. The bushing may be formed
80 of porcelain or earthenware. The inner section 6 is provided with a shoulder 8, corresponding with a similar limiting-shoulder of the bushing 1. The outer section 7 is provided with a shoulder 9. A screw-cap 10
85 screws over the outer end of the bushing 1 and fits closely to the section 7, and between this cap 10 and the shoulder 9 and outer end of the bushing 1 is packing material 11. Asbestos is a suitable packing material. It will
90 be observed that by screwing up the cap 10 this packing material is caused to press the sections 6 and 7 of the insulating-bushing together, holding them firmly within the metal bushing 1, so that they may not rotate therein, and thereby vary the distance between
95 the sparking points 3 and 4. As an additional means for preventing rotation of the sections of the two-part insulating-bushing relative to each other and for preventing rotation of the conductor 5 I prefer to provide
100 said conductor with an enlargement 12, of a

square or other polygonal form, fitting within corresponding recesses in the ends of the sections 6 and 7 of the insulating-bushing. The conductor 5 being thus secured to the
 5 insulating-bushing at its center only is free to expand in both directions under the influence of heat without imposing any strain whatever upon the porcelain bushing.

When the sparker is in use, the inner section 6 of the insulating-bushing is exposed only to the hot gases of the explosion-chamber and the section 7 is exposed only to the external air, and while there is some conduction of heat from one section to the other
 15 the great stresses which exist in a one-piece bushing, due to the difference in temperature of its ends, do not exist in either of the sections of the two-part bushing, and hence there is practically no tendency for either of
 20 the sections to break. The screw-cap 10 holds the sections of the two-part bushing together firmly and prevents rotation thereof in the socket.

Having thus completely described my invention, what I claim, and desire to secure by
 25 Letters Patent, is—

1. In an igniter, the combination with a socket for an insulating-bushing, and a two-part insulating-bushing therein having a longitudinal bore for the reception of an electrical conductor, the outer of the sections of
 30 said bushing having at its inner end a recess adapted to receive a head of such conductor, of a conductor fitting within said bore and having a head located within said recess, means for clamping the conductor to said outer section, and means for holding the sections of the bushing in place within said
 35 socket.

40 2. In an igniter, the combination, with a

socket for an insulating-bushing, of a two-part insulating-bushing, the adjacent ends of which are provided with polygonal-shaped recesses, an electrical conductor within a bore
 of said insulating-bushing and provided with
 45 a polygonal-shaped enlargement fitting within the said recesses in the sections of said bushing, and means for holding the sections of said bushing within said socket.

3. In an igniter, the combination, with an
 insulating-bushing formed in two sections, provided each with a bore for the reception of a sparking point, and also provided, at their ends, with polygonal-shaped recesses
 55 adapted to receive an enlargement on the sparking point, of a sparking point within said bores, and provided with a polygonal-shaped enlargement fitting within the said recesses in the sections of the bushing.

4. An insulating-bushing for use in igni-
 60 ters, consisting of two sections of insulating material, provided each with a bore for the reception of a sparking point, and with polygonal-shaped recesses on their adjacent ends adapted to receive an enlargement on the
 65 sparking point.

5. A sparking point for igniters, consisting of a rod of conducting material adapted to be placed within a two-part insulating-bushing, and provided at an intermediate point
 70 with a polygonal-shaped enlargement adapted to fit within recesses in the sections of the bushing.

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

LOUIS B. SMYSER.

Witnesses:

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