

1,335,797.

Patented Apr. 6, 1920.

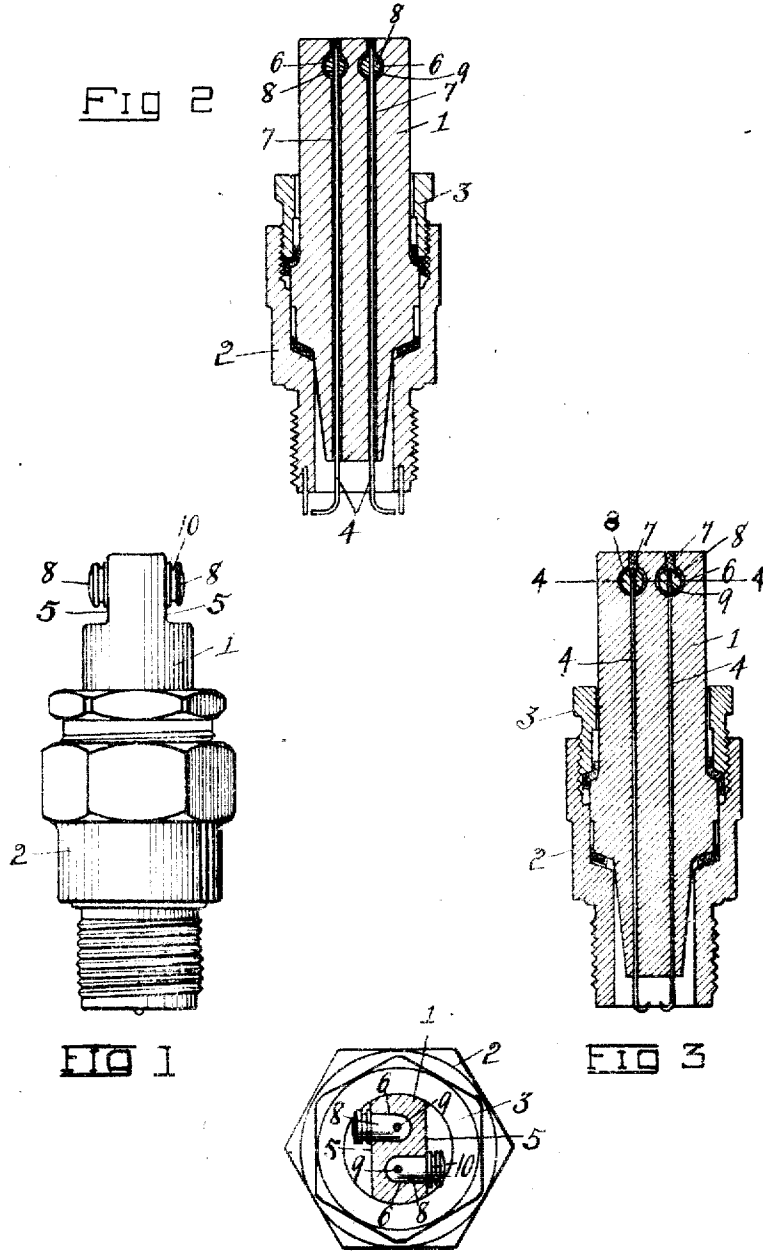


FIG 4

INVENTOR  
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*His attys.*

# UNITED STATES PATENT OFFICE.

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## SPARK-PLUG.

1.335,797.

Specification of Letters Patent.

Patented Apr. 6, 1920.

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*To all whom it may concern:*

Be it known that I, OTTO C. ROHDE, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Spark-Plug; 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, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

The invention relates to spark plugs for internal combustion engines, and has for its object the provision of a simple and improved construction of spark plug whereby its insulator is provided with two separate electrode wires and terminal connections therefor, so disposed that they are effectively insulated from each other and enable the plug to be used either as a series or as a dual ignition spark plug.

The invention is fully described in the following specification, and while, in its broader aspect, it is capable of embodiment in numerous forms, a preferred embodiment thereof is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a spark plug embodying the invention. Fig. 2 is a central longitudinal section thereof adapted for dual ignition. Fig. 3 is a similar section of the spark plug embodying the invention and adapted for use as a series plug, and Fig. 4 is a cross-section on the line 4—4 in Fig. 3.

Referring to the drawings, 1 designates the insulator of the spark plug which may be of porcelain or any suitable insulating material, 2 the customary metal body shell having an opening therethrough in which the insulator 1 seats and, in the present instance, being provided with an internal gland nut 3 for coacting with the insulator to hold it firmly to its seat in the shell as well understood in the art. The construction of the shell 2 is such as to enable it to be used in any standard automotive engine and to permit the use of a standard socket wrench in screwing the plug into or unscrewing it from its receiving opening in the engine. It will be understood that while

a gland nut 3 is illustrated in connection with the shell 2 for securing the insulator in the shell, this may be accomplished in any other suitable or well known manner as is apparent.

The insulator 1 may be of the ordinary insulator construction except that instead of being provided with one longitudinal opening therethrough for receiving an electrode wire, it is provided with two of such openings which are transversely spaced and in each of which is cemented or otherwise suitably secured an electrode wire 4, and the upper or outer end of the insulator is flattened or incut at opposite sides thereof in planes parallel to the spacing of the electrode wires, as shown at 5. Each flattened portion 5 is provided with a socket 6 which sockets are transversely spaced from each other to provide an insulating wall therebetween and extend inward beyond the respective electrode wire receiving openings 7 and in intersecting relation therewith, as shown. The sockets 6, however, terminate short of the opposite side of the insulator. A terminal plug 8 is inserted into each socket 6 being securely cemented therein and is provided transversely therethrough with an opening 9 in register with the electrode wire receiving opening 7 and adapted to receive and make electrical connection with the adjacent end portion of an electrode wire disposed in the respective opening 7. After an electrode wire 4 has been positioned in an opening 7 and electrically connected to a plug 8, the outer end of the opening 7 is closed with a suitable insulating cement.

Each plug 8 is provided at its outer end with a terminal connecting head which is, in the present instance, of the slip connection type and the outer end of the head terminates short of or does not project beyond the outer side of the body portion of the insulator 1 so as not to interfere with placing a socket wrench over the plug.

If it is desired to make the plug of the dual ignition type, the outer ends of the electrode 4 are turned outwardly or away from each other and into adjacent sparking relation to respective terminal points 11 projecting from the outer end of the shell 2 at opposite sides thereof, as shown in Fig. 2. If, on the other hand, it is desired to have the plug function as a series spark plug,

the shell terminals 11 may be eliminated and the angled outer ends of the electrode wires turned toward each other in proper sparking relation, as illustrated in Fig. 3.

5 It is therefore apparent that with my construction of plug it may be adapted to function either as a series spark plug or as a dual ignition spark plug. It is also evident that I have provided a simple and efficient  
10 means for providing a lateral terminal connection for the electrode wires with the terminal wire connecting ends thereof disposed at opposite sides of the insulator, and that the separate terminal plugs are effectively  
15 insulated from each other.

I wish it understood that my invention is not limited to any specific construction, arrangement or form of the parts, as it is capable of numerous modifications and  
20 changes without departing from the spirit of the claims.

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

25 1. In a spark plug, an insulator having two longitudinal openings therein and having separate transverse sockets adjacent to its outer end and extending in opposite directions, one from each of said longitudinal  
30 openings with their inner ends in transversely spaced lapping relation, an electrode wire in each longitudinal opening, and a terminal plug fixed in each transverse socket and having a transverse opening into which  
35 the respective electrode wire fits, said plugs

having their terminal connecting ends exposed at opposite sides of the insulator.

2. In a spark plug, an insulator having two longitudinal openings therein and having separate transverse sockets adjacent to  
40 its outer end and extending in opposite directions, one from each of said longitudinal openings, with their inner ends in transversely spaced lapping relation, an electrode wire in each longitudinal opening, and a  
45 terminal plug fixed in each transverse socket and having a transverse opening into which the respective electrode wire fits, said plugs having their terminal connecting ends exposed at opposite sides of the insulator and  
50 inset relative to the sides of the insulator body.

3. In a spark plug, an insulator having opposite sides of its outer end portion flattened and having a transverse socket projecting inward from each flattened  
55 portion with the sockets in spaced parallel relation and terminating short of the opposite flattened side of the insulator, with their inner ends in transversely spaced lapping relation, a terminal plug fixedly projecting into  
60 each of said sockets and having a transverse opening within the insulator, and an electrode wire disposed longitudinally in the insulator for each plug and having an end  
65 thereof fitted into the transverse opening of the respective plug.

In testimony whereof, I have hereunto signed my name to this specification.

OTTO C. ROHDE.