

No. 682,336.

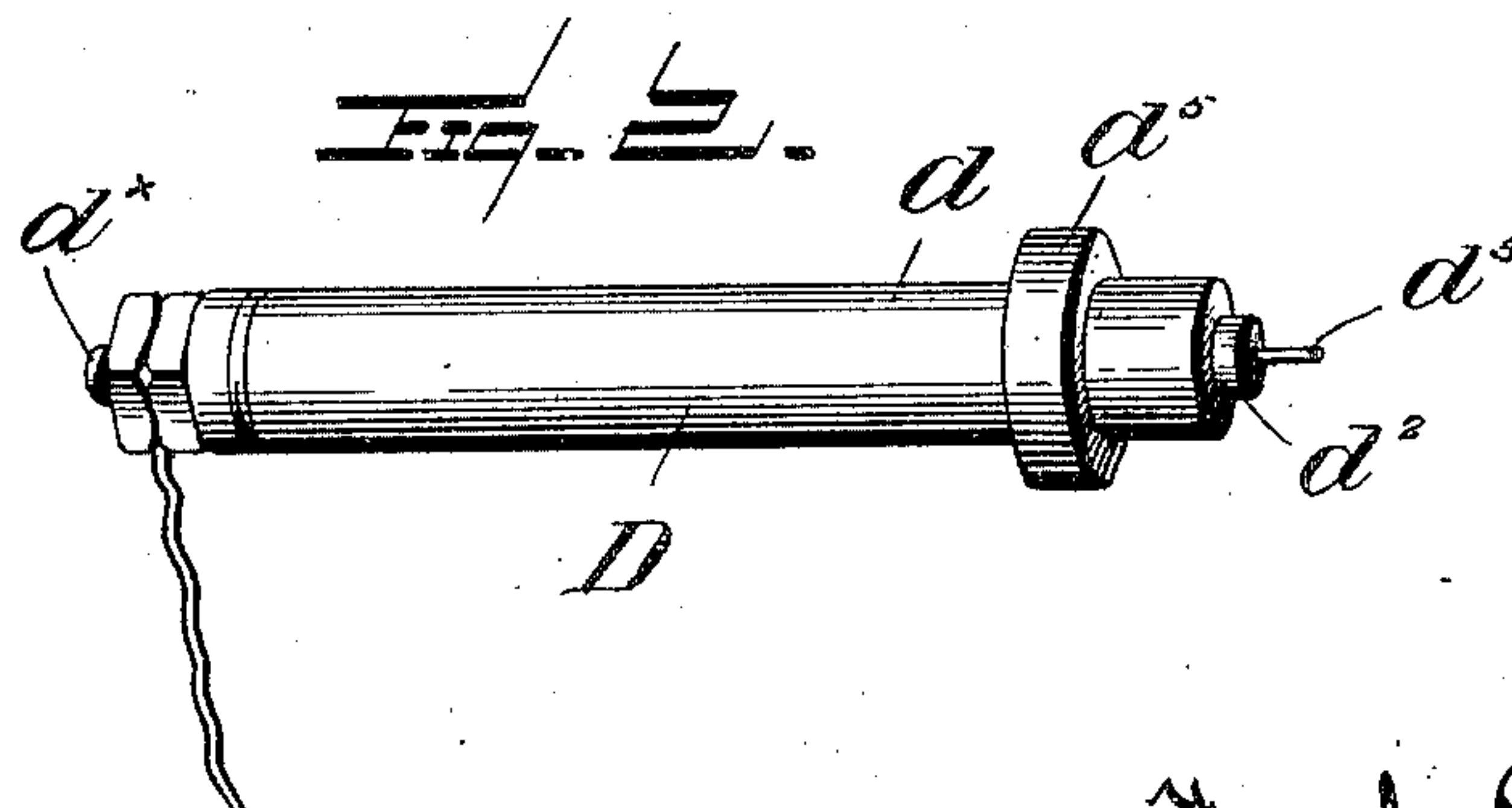
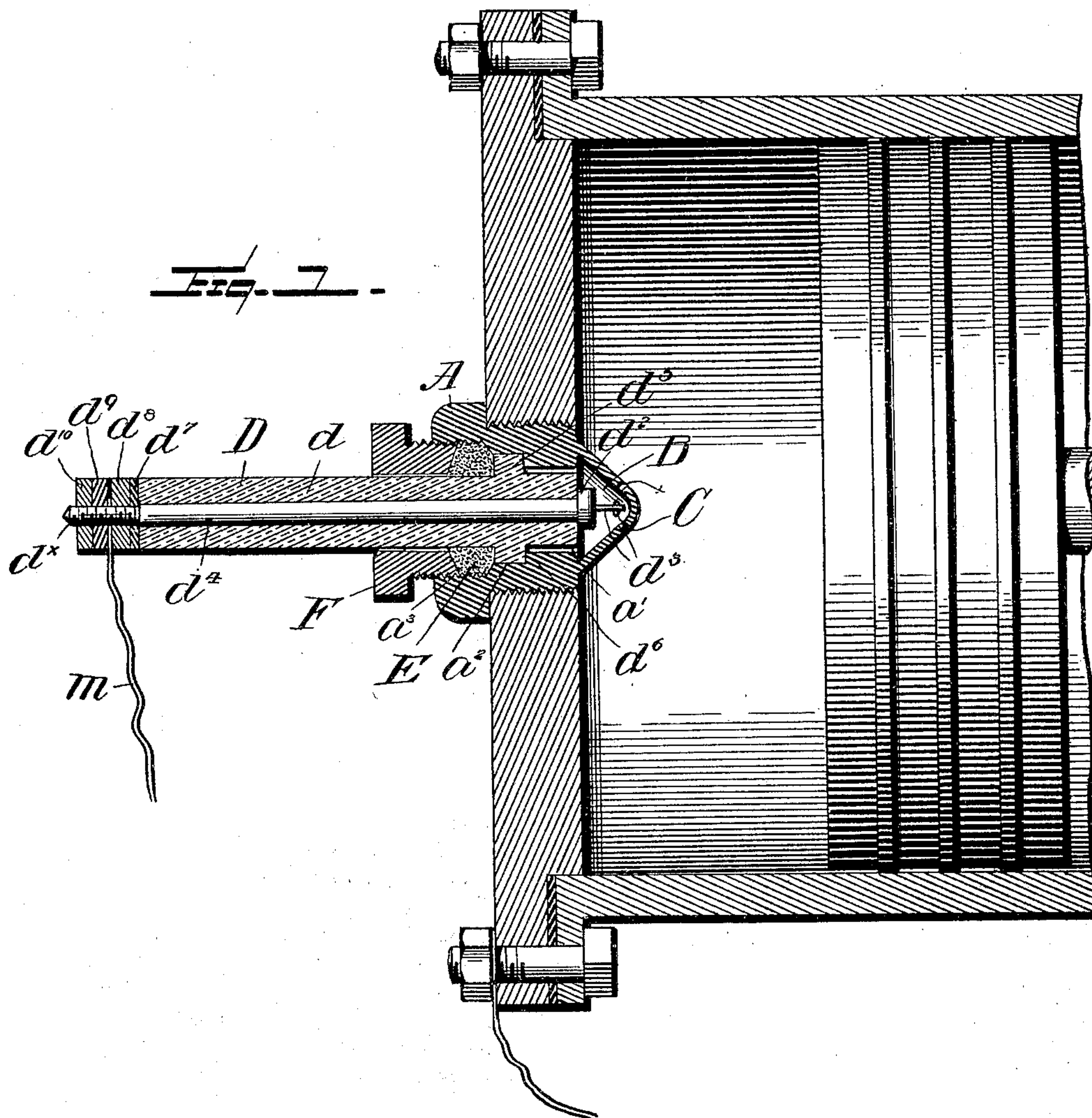
Patented Sept. 10, 1901.

F. R. McMULLIN.

ELECTRIC SPARKER FOR GAS ENGINES.

(Application filed Mar. 8, 1900.)

(No Model.)



WITNESSES

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FRANK R. McMULLIN, OF CHICAGO, ILLINOIS.

ELECTRIC SPARKER FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 682,336, dated September 10, 1901.

Application filed March 8, 1900. Serial No. 7,868. (No model.)

To all whom it may concern:

Be it known that I, FRANK R. McMULLIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Sparkers; 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.

My invention relates particularly to the class of electric sparkers; and it consists in the novel features hereinafter described, reference being had to the accompanying drawings, which illustrate one form in which I have contemplated embodying my invention, and said invention is fully disclosed in the following description and claim.

Referring to the drawings, Figure 1 represents my invention applied to the combustion-chamber of an explosive-engine. Fig. 2 is a perspective of the removable electrode separated from the other parts of the sparker.

The object of my invention is to provide a means whereby the blackening of the electrodes used in explosive-engines for igniting the charge by an electric spark or arc is entirely or in a great measure avoided. This I accomplish by causing the sparking to take place in a casing extending into the combustion-chamber of the engine, but isolated therefrom, leaving only fire communication between the interior of the casing and the said combustion-chamber.

In the outer wall of the combustion-chamber is a threaded opening, in which is screwed a plug A. The inner end of this plug, which is of conical form, is constructed, as shown, so as to constitute a cone-shaped casing forming the inner wall of a conical chamber B. This chamber, which may be termed an "igniting-chamber," communicates with the combustion-chamber of the engine by ports C, which are large enough to permit of fire communication between the two. The plug A is made hollow, as shown. Adjacent to the conical chamber B is the cylindrical opening a' , which is of smaller diameter than the greatest diameter of the conical chamber. At the outer end of this cylindrical opening a' the interior of the plug is enlarged to form the recess a^2 , with the shoulder d^6 between

the same and the cylindrical opening a' . At the outer end of the recess a^2 the interior of the plug is still further enlarged into the threaded portion a^3 .

A platinum tip d^3 constitutes one of the electrodes, and this tip is secured to the conductor rod or wire d^4 . At the point of joining of these two parts or adjacent thereto there is provided the head d^2 , forming a flange-like projection extending outwardly beyond the body of the conductor d^4 . This said conductor is surrounded by a non-conducting and incombustible cylinder or shell d , termed the "insulator." This insulator is provided with an outwardly-extending bead or flange d^5 near the inner end of the same, and when in position this flange comes in contact with and bears against the shoulder d^6 . A ring of packing surrounds the insulator, and this is compressed and forced against the flange a^5 by a threaded thimble F, fitting the outer threaded portion of the interior of the plug A, thus preventing all leakage of gas. The outer end of the conductor is screw-threaded and is provided with the washer d^7 , fitting against the outer end of the insulator. A nut d^8 is screwed tightly upon said washer, holding the head or flange d^2 against the inner end of the insulator. Electric connection is made with the conductor by a wire held in contact with the same between the nut d^8 and a further nut d^9 . d^{10} is a jam-nut turned tightly against the nut d^9 to hold the same from accidental displacement. The platinum tip is made of such length that the requisite space is left between the said tip and the inner wall of the conical chamber B, through which the electrical current may arc, the said platinum tip forming one electrode and the conical casing the other. The conductor and tip, with the insulator, are together readily removable from the plug A, and this I have for convenience termed the "removable electrode" and have designated the same by the reference-letter D. These parts are shown disconnected from the other parts of the sparker in Fig. 2.

The operation of my device is as follows: The wires from the Rumkorff coil and make-and-break mechanism are fastened one to the conductor d^4 by the means hereinbefore described and the other to the metal work of the

engine, whereby when the circuit is closed in the Rumkorff coil the current will form an arc across the platinum point d^3 to the wall of the chamber B. This will occur at the
5 time when the charge in the cylinder is at its highest point of compression, and part of the charge will be forced into the chamber B, where it is ignited by the arc, and the charge in the main combustion-chamber will be im-
10 mediately fired through the ports C. It will thus be seen that the deposit that will be made in the igniting-chamber will be only that resulting from the combustion of the portion of the charge within that chamber,
15 and as the amount of the charge consumed therein is extremely small such deposit within said chamber will be correspondingly light. By this means the parts are kept practically free from the blackening effect observed in
20 many explosive-engines.

What I claim, and desire to secure by Letters Patent, is—

In an explosive-engine, the combination with the combustion-chamber, of an electric igniter comprising among its members of the
25 conical igniting-chamber communicating with the combustion-chamber by fine openings in the walls of the igniting-chamber near the apex thereof forming a fire communication between them, and an electrode extend-
30 ing within the igniting-chamber to near the apex of the same, forming with said apex the two electrodes of the igniter, substantially as described.

In testimony whereof I affix my signature 35 in the presence of two witnesses.

FRANK R. McMULLIN.

Witnesses:

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