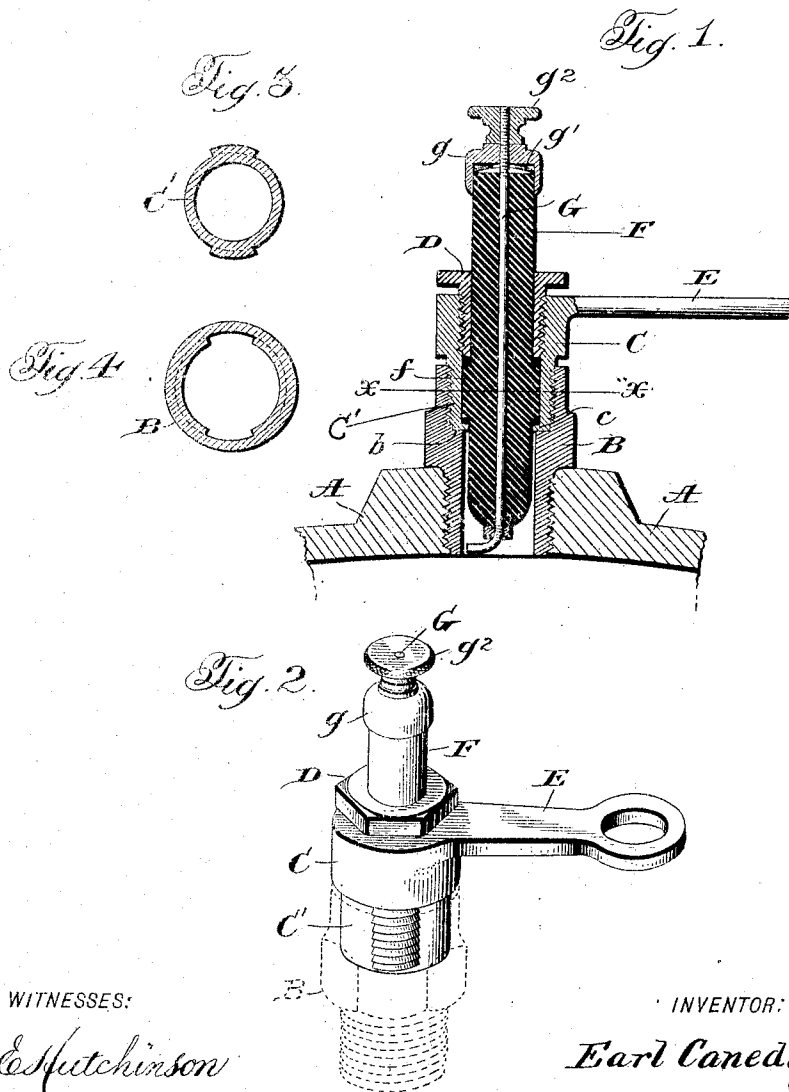


982,474.

Patented Jan. 24, 1911.



WITNESSES:

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EARL CANEDY, OF CHICAGO HEIGHTS, ILLINOIS.

SPARK-PLUG.

982,474.

Specification of Letters Patent.

Patented Jan. 24, 1911.

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To all whom it may concern:

Be it known that I, EARL CANEDY, citizen of the United States, residing at Chicago Heights, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Spark-Plugs, of which the following is a specification, reference being had therein to the accompanying drawing.

The invention relates to an improvement in "sparking plugs" for explosive engines and is embodied in the construction and arrangement of parts presently to be described and defined in the claims.

My invention is designed to avoid the necessity of the use of a wrench or hand tool and to render the sparking plug susceptible of being quickly removed, or at least the insulator, without the employment of hand tools or wrenches.

A further object of the invention is to provide a sparking plug with an insulator holder, the latter having an attached handle extension thereon, and to so form the connection between the insulator holder and the nipple that the same can be easily removed without a full rotation of the parts.

A still further object is the provision of a sparking plug with what I have termed a "quick release" for the insulator and to associate with the holder for the insulator an outwardly extending handle. In connection with the quick release, it is designed to be applied from two or more different positions so that should the nipple be threaded into the cylinder and be positioned so as to have some of the fixed parts of the engine interfere with the handle of the holder, then the holder could be turned to another position and the coupling properly made.

In my construction a further advantage may be stated to reside in an insulator holder with a handle so that when the insulator is removed the handle can be employed conveniently for holding purposes during the cleaning operation. Again by employing a handle as a part of the insulator holder and thus avoiding the use of wrenches, the liability of breaking the protruding end of the insulator is avoided which is not the case when a detached wrench is employed.

With the above stated objects of the invention, I desire it understood that the construction shown in the accompanying draw-

ings is one embodiment but that variations can be made without departing from the nature of the invention.

Figure 1, is a longitudinal section of a sparking plug embodying the invention, showing a part of the cylinder; Fig. 2, is a perspective view of the sparker; Fig. 3 is a section through the line $x-x$ of Fig. 1; showing only the nipple; and Fig. 4, is a sectional view of the carrier.

A designates the exterior metallic shell the same being a portion of the cylinder part of an explosive engine into which is secured by a threaded connection the sparking nipple B forming one of the electrodes. This sparking nipple having a central bore is provided exteriorly with a wrench hold and the upper part of the interior is chambered out or enlarged to form a receiving portion for the insulator carrier or holder, presently to be described. The nipple B is so constructed that it can be readily produced by machine work, the lower wall of the upper chambered part being provided with a seat such as b . The inner side walls of the chambered part of the nipple are provided with suitable interrupted threads arranged at different points to form one portion or member of a "breach block" coupling structure, as shown in Fig. 3.

C designates what I shall term a holder or carrying sleeve having a central bore, the upper portion of which is threaded and in the threaded portion is adapted to be fitted the hollow bushing D. Below the threaded portion of the holder C is a chamber, the lower end of which terminates in an inwardly extended flange c , against which a packing gasket rests. The holder C has the extended coupling part C' formed with suitable interrupted threads at different points and corresponding in length to the length of the space between the threads in the chamber of the nipple B. The purpose of this construction is to acquire a "breach block" type of joint whereby the holder can be inserted quickly in the nipple and by a turn less than a complete turn, be securely positioned in the nipple. In this connection the construction is such that the lower end of the holder can be readily machine-finished so that when the parts come together a practical and efficient gas tight joint is formed. It is to be understood however, in this connection that suitable packing can be employed if desired. Projecting

out from the upper portion of the holder is a lever E in the form of a hand hold, the same being fixedly secured to the holder. This lever may be provided with a suitable opening, if desired, at its outer end. It is to be understood that the particular form of lever shown is a preferred embodiment, but that various other forms or engaging projections or hand holds can be employed.

F designates the insulator, which at one end projects into the nipple and at the opposite end projects beyond the holder and is exposed, as is customary, and, as is usual, this insulator is conveniently made with a longitudinal perforation through which the electrode G passes. This insulator is provided at a point adjacent its center with an annular shouldered part *f* fitting in the lower part of the holder C and between the horizontal parts of the shoulder both above and below are placed conveniently suitable sealing agents or washers, and by the packing nut D this insulator is fixedly secured in the holder C. The insulator may very conveniently be cemented into the holder as in practice it will seldom be necessary to remove the insulator from the holder. The electrode G is conveniently secured in the insulator in any suitable manner, one method being illustrated in the drawings, which method is by threading onto the lower end of the conductor a suitable nut *f*² and at the upper end securing a cap *g* having a depending annular flange fitting the upper end of the insulator. Interposed between the cap *g* and the insulator is a compensating disk *g*¹ so that when the cap is screwed down on the conductor the compensating disk will permit slight expansions of the materials without causing rupture. On the upper end of the electrode is a thumb nut *g*² between which and the cap the main conductor wire is attached. The lower end or sparking end of the electrode G is conveniently bent at a right angle to a point adjacent the inner wall of the bore of the nipple B, and inasmuch as the metallic parts are machine-finished the electrode together with the insulator can be readily removed and when replaced the position of the sparking point relative to the nipple wall will always be the same. This is an important advantage.

In operation should the lower part of the insulator in the nipple become coated with carbon, it is only necessary to give the holder a quarter turn so that the threads thereof will register with the smooth parts between the threads of the nipple, and it may then

be quickly drawn out thereby exposing the lower part of the insulator which can obviously thereafter be easily cleaned, and again quickly replaced. The construction also avoids the necessity of the use of the wrench, and, in addition thereto the insulator can be properly positioned in the holder and firmly there secured so that the difficulty of positioning the sparking point is avoided, as above stated.

The prime advantage of the invention is that of the removal of the insulator for cleaning purposes, without the employment of a wrench and at points where it would be exceedingly difficult to employ a wrench; and the avoidance of the removal of the nipple.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:—

1. A spark plug for explosive engines comprising a nipple part threaded for fixed connection with the cylinder of an engine, the outer part of the nipple having an enlarged chamber formed with a parallel series of interrupted threads, the series being spaced apart at opposite ends leaving intervening spaces, a carrier having an internal bore, a handle, and a series of interrupted threads adapted for coöperation with the threads of the nipple part, an insulator in the carrier and projecting in opposite directions beyond the same, and a nut bushing at the outer end of the carrier having a threaded engagement therewith, substantially as described.

2. A spark plug for explosive engines comprising a nipple part threaded for fixed engagement with an engine cylinder, the outer part of the nipple having an enlarged chamber formed with a series of interrupted threads spaced apart at opposite ends, a carrier having a central bore, and an inwardly extending shoulder part at its inner end and a threaded outer part, interrupted threads on the outer face of the lower part of the carrier adapted for coöperation with the threads of the nipple, a nut bushing threaded to the upper part of the carrier, a handle extension on the carrier, and an electrode having a shouldered part resting on the shoulders of the carrier and with which the nut bushing coöperates.

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

EARL CANEDY.

Witnesses:

THOS. R. HEATH,
CALVIN T. MILANS.