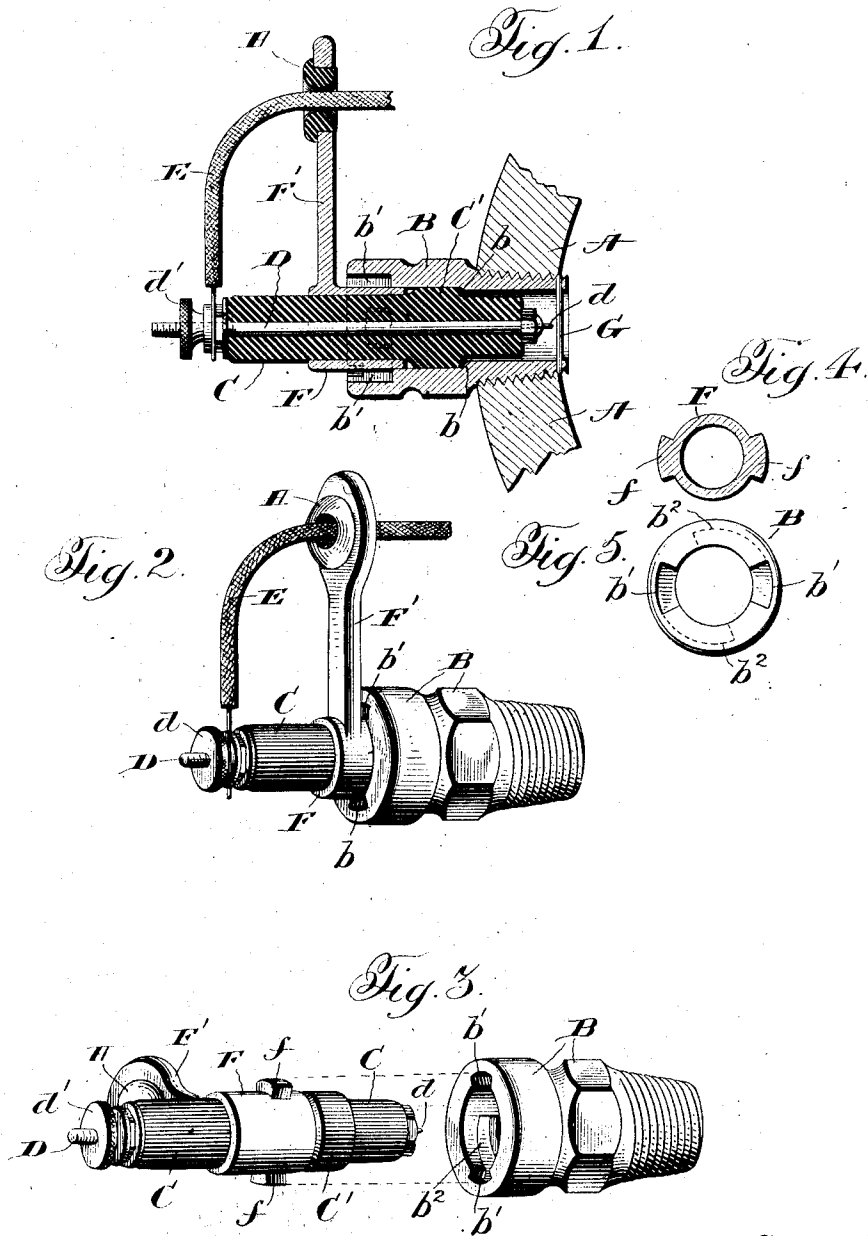


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SPARKER FOR EXPLOSIVE ENGINES.
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982,473.

Patented Jan. 24, 1911.



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UNITED STATES PATENT OFFICE.

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SPARKER FOR EXPLOSIVE-ENGINES.

982,473.

Specification of Letters Patent.

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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 Sparkers for Explosive-Engines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to an improvement in "sparkling plugs for explosive engines" and it is embodied in the construction and arrangement of parts presently to be described and defined in the claim.

Heretofore, sparking plugs which have been largely in use have been attached to the cylinder of the explosive engine and have been so constructed that it was necessary to remove the entire plug including the nipple from the cylinder when it was desired to clean the insulator. In such constructions it was necessary to employ a wrench and considerable power or force to effect the removal of the nipple from the cylinder. The usual construction is an uninterrupted threaded connection between the parts and thereby necessitating the repeated application of the wrench in unscrewing the coupling or connection. It is obvious that in automobile constructions these sparking plugs are in common with other devices so positioned as to economize in space as much as possible and so as not to interfere with other working parts. In such positions it has been found quite difficult to make the wrench application and it frequently occurs that any endeavor to remove the plugs, either the plugs or their insulators are broken or adjacent parts are damaged by the wrench slipping from the wrench hold on the plug.

My invention is designed to overcome the objection of the necessity of the use of a wrench and the repeated application of the wrench to the plug in the act of removal or primary application.

Generally speaking, it may be stated that the object of the invention is to avoid the necessity of the use of a detached wrench or hand tool in connection with the sparking plug and to provide a sparking plug with an insulator which latter can be removed by a movement of less than a whole turning movement of the insulator carrying part.

A further object is the provision of an insulator carrying part of the spark plug with

an attached handle part and an interrupted coupling part, the coupling and uncoupling of which can be effected by turning the insulator holding part less than a complete revolution.

A still further object is the provision in a sparking plug of what I shall term a quick release coupling between the insulator carrier and the nipple part of the plug, and in this connection to so construct the quick release coupling that the same may be applied for coupling purposes in two or more different positions so that should the nipple be placed in the cylinder and one of the coupling positions arranged so as to bring it opposite or adjacent a fixed part of the engine, thereby interfering with the handle or holder forming a part of the quick release coupling, that then the quick release coupling can be made by virtue of the two or more positions in which the nipple can be applied without interfering with the coupling.

A still further object is to provide a handle part to a quick release coupling so that when the coupling which carries the insulator is removed, the handle may be readily employed for holding the insulator during the cleaning or wiping processes.

In the accompanying drawing is shown a preferable embodiment of the invention, but it is to be understood that many changes and alterations may be made without departing from the principle and 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 separated view of the insulator and carrying plug; Fig. 4 is a section through the outer end of the carrying plug; and Fig. 5 is a similar view through the lug part of the sleeve.

In the drawing A designates a section of cylinder of any well known form; B designates the nipple part of the sparking plug. This nipple has the usual threaded end entering the threaded bore or hole in the cylinder wall. The nipple is also formed with a hollow center, the outer portion of which is somewhat enlarged to form a chamber having a shoulder *b* while the extreme outer end is provided internally with two oppositely arranged inclined grooves *b*² from which extend outwardly toward the end the

entering grooves *b'* in effect forming in this connection a breech block or interrupted threaded connection or coupling.

C designates the insulator of any desired material carrying the electrode D in a central longitudinal bore thereof. The inner end of the electrode is provided with a sparking point *d* arranged axially at the center and projecting out longitudinally as shown in Fig. 1. The opposite end of the electrode D has a thumb nut *d'* by which the conductor E is secured to the electrode. The insulator C has the shouldered part C' of a diameter to fit the outer part of the bore of the nipple.

Surrounding the insulator is a carrier F in the form of a sleeve fashioned to closely fit the insulator C and serve as a holder therefor when the insulator is removed. The carrier F has formed on opposite sides lugs *f* constituting the engaging members of the aforesaid breech block of interrupted threaded coupling of the nipple. These projections are substantially dove-tailed in formation and slightly inclined, their size being such as to permit their insertion into and from the entering grooves *b'* and to pass into the inclined grooves *b''* when turned. Secured to the holder F is a handle F'. This is shown conveniently as a permanent part of the holder, and in that connection serves as a means for holding the insulator when the same is removed from the nipple.

To provide a protected sparking point for the ground connection I conveniently extend the wire G across the center of the inner end of the nipple B as shown in Fig. 1. This wire is located wholly within the end of the nipple and directly over the sparking point *d*. This arrangement is advantageous in that this terminal wire is in a position to prevent its being bent or displaced before the nipple is placed in position and also it presents a terminal which is in alinement with the point *d* irrespective of the position of the point *d* in the nipple.

In practice the nipple B is inserted in the cylinder and the insulator C' is then forced in with the carrier F which is then placed in

position, the projection of the carrier entering the grooves in the nipple and by turning the carrier about one quarter of a revolution the parts are locked securely together, the inner end of the carrier abutting the enlarged part C' of the insulator. The reverse movement will readily uncouple the parts. It has been found convenient to form an opening in the end of the handle F, lining said opening with a bushing H of insulating material so that the conductor E can be passed therethrough, the handle serving as a support.

The primary advantage of this construction is that of the quick removal of the insulator for cleaning purposes or for inserting a new insulator should the one in use become broken. A further advantage is that the use of a detached wrench is avoided.

I desire it understood that the breech-block connection shown is susceptible of various modifications without departing in the least from the principle of the invention.

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

In a spark plug, for explosive engines, the combination with the cylinder part of an engine, of a nipple threaded into the cylinder and constituting a fixed connection therewith, the outer part of the nipple having an enlarged central bore formed with inclined inwardly projecting holding parts spaced apart at opposite ends, a carrier having an internal bore and carrying an insulator projecting in opposite directions beyond the carrier and having at different points outwardly extending lugs or projections adapted to enter the space beyond the projecting parts of the nipple to engage the inner sides thereof, an electrode carried by the insulator, and a handle part for the carrier.

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

EARL CANEDY.

Witnesses:

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