Aug. 30, 1949. G. G. BURRELL 2,480,545

MOISTURE SHIELD FOR SPARK PLUGS

Filed June 6, 1947

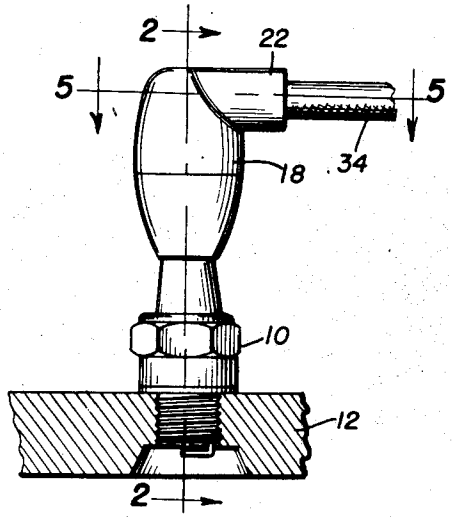


Fig. 1.

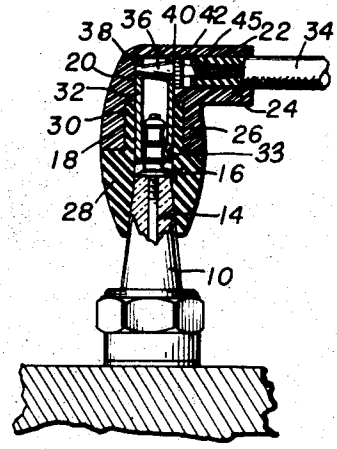


Fig. 3.

Fig. 2.

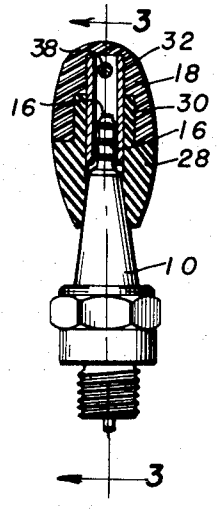


Fig. 4.

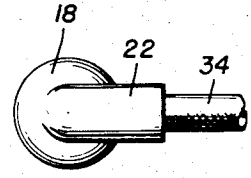
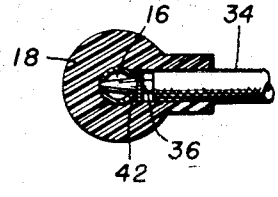


Fig. 5.



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Patented Aug. 30, 1949

2,480,545

UNITED STATES PATENT OFFICE

2,480,545

MOISTURE SHIELD FOR SPARK PLUGS

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Application June 6, 1947, Serial No. 752,921

2 Claims. (Cl. 174—77)

1

This invention appertains to novel and useful improvements on spark plug shields and fastening means. Further, this invention relates to similar subject matter in Patent 2,436,712, dated February 24, 1948.

An object of this invention is to provide means for preventing moisture from engaging selected portions of spark plugs and means for conveniently and easily attaching and detaching said first mentioned means.

Another object of this invention is to provide improved means for retaining an ignition wire within a housing, forming part of the present invention.

A further purpose of the present invention is to provide a device of the nature to be described which is adaptable to conventional spark plugs of various sizes and configurations.

A still further purpose of this invention resides in the provision of an extremely simple device, entirely free of mechanically moving elements and which further utilizes a bare minimum of components.

It is another intent of the present invention to provide an improved resilient spark plug engaging means which is pliable in order to conform to the various configurations of spark plugs.

It is another intent of this invention to provide common means for conducting current from the conventional distributing wire to the pole of a plug and for clipping the invention to said plug.

Ancillary objects and features of novelty shall become apparent to those skilled in the art, in following the description of the preferred embodiment of the present invention, illustrated in the accompanying drawings, wherein:

Figure 1 is an elevational side view of the preferred form of the present invention, showing the same utilized in conjunction with a conventional spark plug;

Figure 2 is an elevational side view of a spark plug and a longitudinal sectional view of the invention incorporated therewith and taken substantially on the line 2—2 of Figure 1 and in the direction of the arrows;

Figure 3 is a longitudinal sectional view of the invention disclosed in Figure 2 and taken substantially on the line 3—3 thereof and in the direction of the arrows;

Figure 4 is a plan view of the invention disclosed in Figure 1, and;

Figure 5 is a transverse sectional view of the invention disclosed in Figure 1 and taken substantially on the line 5—5 thereof and in the direction of the arrows.

2

Referring now in detail to the illustrative preferred embodiment of the present invention, like reference characters are used throughout to indicate similar elements.

This invention has been conceived and developed to provide a device which is extremely simple in construction and further, which lends itself well to commercial manufacture and common shop practices. The difficulties arising from wet spark plugs and the like are well known. Efficient operation of the internal combustion engine associated therewith (or other prime mover) is impaired and materially reduced. It is also well known in the art that periodically spark plugs should be cleaned and readjusted. During this operation the conventional ignition wires must be removed from the pole extending therefrom. It is not infrequent that the mechanic grasps the said ignition wire and pulls the same violently from the said pole. As often as not, the conventional clip is either broken or pulled from the ignition wire thereby causing additional repair. This invention has been developed to obviate the above mentioned difficulties.

Heretofore moisture shields and clips for distributor wires have been developed, invented and patented. However, inspection of a selected figure in the drawings discloses that this invention is developed and rendered fully operative by utility of only four mechanical elements. The extreme simplicity characterized in the present invention is paramount in the commercial feasibility and practicability of the present invention.

A conventional spark plug generally indicated at 10 is disclosed as utilized in conjunction with a conventional cylinder head 12, only a portion thereof being shown. The usual, conventional pole 14 is shown extending from the porcelain portion of the said spark plug and the conventional cap screw 16 is threadingly received thereon as is well known in the art. Of course, other appurtenances contiguous to spark plugs are disclosed; however they form no part of the present invention and are not directly connected therewith. Accordingly, a description thereof is deemed unnecessary.

A housing 18 having a bore 20 therein is provided of a phenolic condensate product or some other commercial plastic material. An extension 22 projects substantially perpendicular to the longitudinal axis of the said housing 18 and a second bore 24 is received therein. This second bore is substantially perpendicular to the said first bore 20 and communicates therewith.

An enlargement or recess 26 is provided in the

said bore 20. Then, it will be seen from an inspection of Figure 3 that a resilient shroud or spark plug engaging member 28 is provided in said bore 20 and more specifically in the said recess 26. It is a sleeve or an extension 30 of the said shroud 28 which is received in the recess 26.

Common means for clipping the invention to a conventional spark plug 10 and for conducting electrical energy thereto is provided. This common means is in the form of an insert or sleeve 32 which is positioned in the bore 20. A portion of the said insert 32 engages the sleeve 30 of the said resilient shroud 28 thereby defining a pocket defined by the inner walls of the recess 26 and the outer periphery of the said insert 32. It will be seen that this construction affords a second means for clamping and retaining the said shroud 28 within the body member 18.

Improved means for retaining a conventional distributor or ignition wire 34 within the extension 22 is provided. This improved means consists of a rod 36 extending through suitable apertures 38 and 40 aligned in the insert 32. For ease in manufacture, the forward portion of the said rod 36 may be bevelled and for retaining the said rod within the bore 24 of the extension 22, a serrated enlargement or shoulder 42 extends therearound. This serrated portion obviously engages the confines of the said bore 24. Friction means, preferably a tapered screw 45 extends from the said rod 36 for the purpose of engaging the metallic portion of a conventional distributor wire 34. Upon this engagement, the said ignition wire 34 will obviously be spread or expanded against the confines of the bor 24. It is quite obvious that this expansion will assist in retaining the said distributor wire within the bore 24 and consequently within the invention.

It will be noted that the present invention with its extension 22 provides a convenient member to grasp in removing the same from a spark plug and also, it provides an effective moisture shield for utility with conventional spark plugs.

The insert 32 has an inwardly disposed crimp 33 forming a clip for the cap screw 16. By this construction, the insert, and consequently the device, is retained in place on a spark plug in a positive manner by simply pressing the insert appropriately on a spark plug. The clamping action takes place through the medium of the crimp 33 engaging the spark plug cap screw firmly.

While there has been described and illustrated but a single preferred embodiment of the present invention, capable of performing all of the specifically mentioned objects as well as numerous other objects, it is apparent to those skilled in the art that various changes including omissions, additions and rearrangement of elements may be made herein without departing from the spirit of the invention. Accordingly, limitation is sought only in accordance with the scope of the following claims.

Having described the invention, what is claimed as new is:

1. An attachment for a spark plug which has a spark plug terminal nut, comprising an electrically insulating housing having a bore therein, means comprising a resilient member having a sleeve extending therefrom, said member being adapted to engage a portion of a spark plug, an enlargement in said bore having said sleeve disposed therein, an electrically conductive insert disposed in said sleeve and said bore and having an aperture therein, said insert having a crimp for clampingly engaging the spark plug terminal nut, a transverse bore in said electrically insulating housing, means for retaining an ignition wire in said transverse bore including a tapered rod disposed in said transverse bore and passed through the aperture in said insert, and means forming a part of said retaining means integral with said rod for frictionally retaining the ignition wire thereon in said transverse bore.

2. An attachment for a spark plug which has a peripherally grooved spark plug terminal nut, comprising a housing made of electrically insulating material, a coaxial bore and counterbore in said housing and a transverse bore in said housing opening into said bore, a resilient member with an opening therein, said member being adapted to be disposed on a part of a spark plug so that a part of the spark plug is disposed in the member opening, a sleeve integral with said resilient member and disposed in said counterbore, a metallic insert having a pair of apertures therein and disposed in said sleeve and said bore, said transverse bore having a longitudinal axis with the apertures in the insert aligned therewith, a crimp in the side of said insert for clampingly engaging the side of the peripherally grooved nut, a rod having a tapered end disposed in said apertures establishing electrical communication with said insert, and said rod having a threaded portion disposed in said transverse bore for threadingly engaging a distributor wire.

GEORGE G. BURRELL.

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