E. F. WACKWITZ.

ATTACHMENT FOR SPARK PLUGS.

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1,417,871. Patented May 30, 1922.

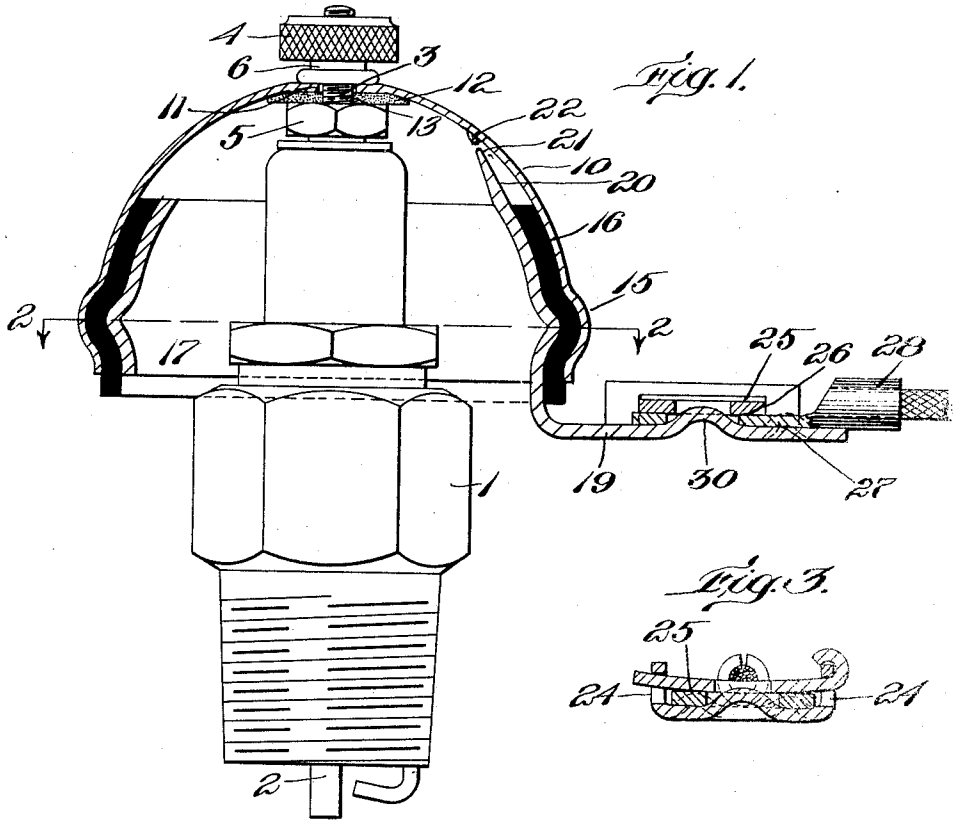


Fig. 1.

Fig. 3.

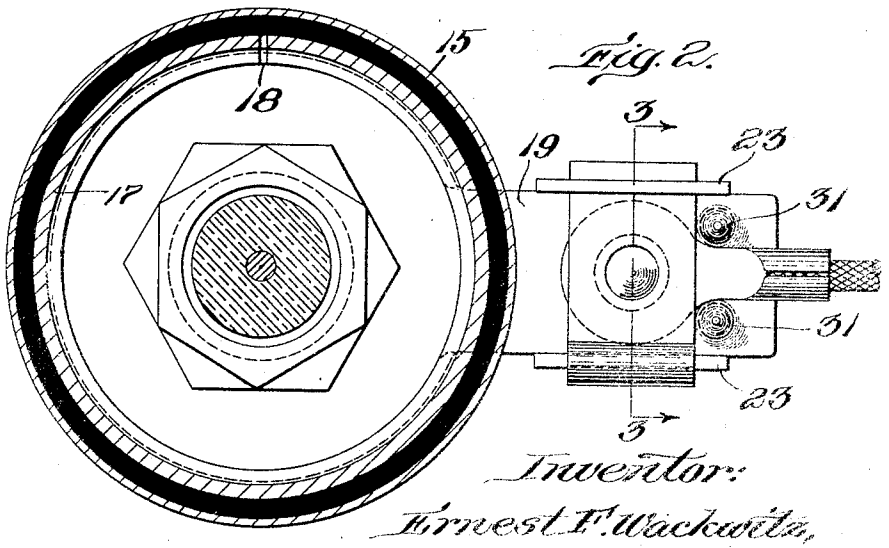


Fig. 2.

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ATTACHMENT FOR SPARK PLUGS.

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To all whom it may concern:

Be it known that I, ERNEST F. WACKWITZ, a citizen of the United States, residing at Arlington Heights, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Attachments for Spark Plugs, of which the following is a full, clear, and exact description.

This invention relates to attachments for spark plugs and with regard to certain more specific features thereof to an attachment adapted to shield the plug from the elements and which also serves to intensify the high tension current.

The invention has for one of its objects to provide an extremely simple, compact and inexpensive canopy or hood which may be fitted with ease over the spark plug for protection and which will protect particularly the porcelain or insulation of the plug.

Another object of the invention is to combine with a canopy or hood, as before mentioned, a terminal for the high tension lead, and to include between the terminal and the plug an auxiliary gap which will serve to increase the voltage at the main spark gap of the plug.

Other features of invention reside in the construction of the terminal before mentioned which enables the operator to insert the lead with great facility and which provides for automatically securing the lead in its attached position.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists of the various features of construction, combination of elements and arrangements of parts which will be exemplified by the construction hereinafter set forth and the scope of the application of which will be indicated in the following claims:

In the accompanying drawings, wherein is shown one of various possible embodiments of the invention;

Fig. 1 is a view of a spark plug with the present attachment shown in vertical central section.

Fig. 2 is a sectional view taken on a line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on a line 3—3 of Fig. 2.

Referring now more particularly to the drawings, wherein similar reference characters refer to similar parts throughout the several views, there is indicated at 1 a spark plug illustrative of the various kinds and types of spark plugs in general use at the present time. The central electrode of the plug is shown at 2 and extends throughout the length of the plug projecting at the top in the form of a threaded stem, as shown at 3. It has been the usual practice to secure the secondary lead either to this stem by fitting it over the top thereof and turning down the thumb nut 4, or to the nut itself after it has been turned down against the nut 5, by means of a spring clip on the lead fitted in a groove 6 formed in the nut 4.

One embodiment of the present invention involves the idea of removing the nut 4 temporarily and applying the attachment shown in Fig. 1 of the drawings by fitting same over the stem 3, and then restoring the thumb nut 4 to secure the attachment in place. To this end there is provided a hood or canopy 10 having a central aperture 11 at the top. A gasket 12 is secured to the inner wall of the canopy, at the top, and is provided with a central aperture 13 permitting penetration by the stem 3. This gasket fits the stem in snug fashion, and being of comparatively soft joint-packing material it serves, particularly when the thumb nut 4 is threaded to locking position, to provide a water tight joint between the hood and the stem 3 of the plug.

The hood or canopy 10 is herein shown as bell or umbrella shaped although it may take on various forms within the scope of the invention. Near the open end of the hood there is formed an annular bead 15 and fitted around the entire lower part of the hood is a ring of insulation 16. Within the hood and adjacent the insulation 16 there is pressed a resilient ring or band 17 split as indicated at 18 and provided with an outwardly extending shelf 19 which is adapted to serve as a part of the secondary terminal connection. The band 17 and the hood 10 are of suitable electrical conductivity and the band is provided with projecting finger 20 adapted to lie in position with its end 21 in close proximity to the hood. If desired a point 22 may be formed on the hood to better define the auxiliary spark gap between the two pockets.

The shelf 19 is provided with means permitting the quick and convenient attachment or detachment of different forms of secondary lead terminals. To this end the shelf

19 is equipped with upstanding flange portions 23 slotted as indicated at 24 in Fig. 3. Through these slots there is passed a leaf spring member 25 which in its lax condition bows downwardly toward the center. In the present embodiment of the invention the spring 25 is shown with a curved edge 26 adapted to provide a lip permitting the flat portion 27 of the lead terminal 28 to be readily inserted to pry up the spring 25 during the attaching operation. It is to be understood that this lip might be provided on the shelf 19 if desired.

As there are many different forms of lead terminals the present invention is designed to be substantially universal in its accommodation of any of the different forms in general use at the present day. To this end a projection 30 is formed centrally of the shelf 19 and below the spring 25 and two similar projections 31 are provided, one on either side of the shelf and slightly beyond the spring 25. In applying a terminal of the style shown in Fig. 2 of the drawings, the end of the flattened portion 27 is inserted under the lip 26. The spring 25 then is pried upwardly, the outer end of the shelf 19 serving as a fulcrum, and the terminal may be shifted inwardly over the projection 30 until the opening in the terminal aligns with this projection whereupon the spring 25 serves to snap the terminal in locked position, the round grip portion of the terminal residing between the projections 31. In the event that the type of terminal is used which has a split fork adapted to serve in position on the thumb nut the attaching operation is the same but in such a case the projections 31 are depended upon to hold the terminal in attached position. Obviously with the three projections and the spring as shown substantially any form of terminal can be used and secured in position on the shelf 19.

By the construction set forth a spark plug may be protected against short circuits arising from water dropping on the plug. Protection is offered to the plug so that when in use and it becomes heated it will not be cracked by water falling on the hot porcelain. In addition to the protection offered, the attachment provides means for increasing the effectiveness of the plug by intensifying the voltage. The whole attachment is extremely simple, compact and inexpensive to manufacture and is well suited to the requirements of practical use.

As many changes could be made in the above construction and as many apparently widely different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter set forth in the foregoing description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having described the invention, what I claim and desire to secure by Letters Patent is:

1. In a device of the character described in combination, a hood of electrical conductivity attachable at its upper extremity over the top of a spark plug, a metal connector for a lead, an insulating member between the hood and connector, and means forming an auxiliary gap between said connector and said hood.

2. In a device of the character described, in combination, a canopy attachment of electrical conductivity having provision for fitting at its upper extremity over the threaded stem of a spark plug electrode whereby a thumb nut may be applied to secure said canopy in place, a water tight gasket fixed inside said canopy at the top to seal the joint between said canopy and said stem.

3. In an attachment for spark plugs, a metal canopy of electrical conductivity, insulation on said canopy, a terminal member of electrical conductivity associated with said canopy, insulated therefrom, but providing with said canopy an auxiliary spark gap for intensifying purposes.

4. In an attachment for spark plugs, a metal hood of electrical conductivity, a band of insulating material within said hood and a terminal member comprising a split metal band adapted to be sprung into place within said hood having a spring connector permitting quick attachment.

ERNEST F. WACKWITZ.