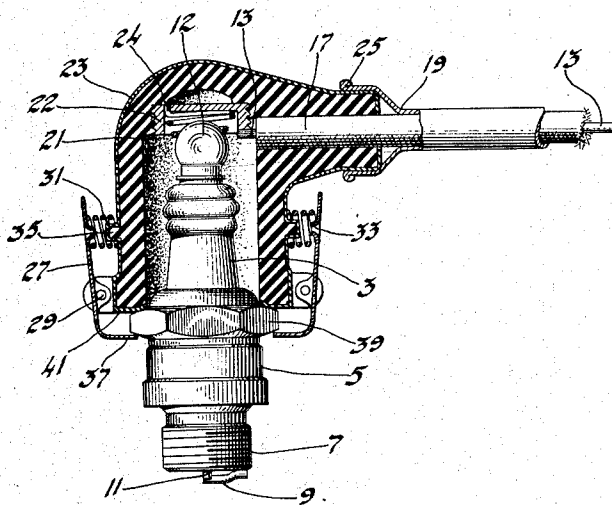


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H. RABEZZANA  
SHIELD FOR SPARK PLUGS  
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## UNITED STATES PATENT OFFICE

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## SHIELD FOR SPARK PLUGS

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mesne assignments, to General Motors Corpo-  
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4 Claims. (Cl. 123—169)

This invention relates to an ignition device and is designed especially to shield a spark plug for use with an internal combustion engine. One primary object of the invention is to prevent interference with the reception of radio waves by receiving sets used on motor vehicles, aeroplanes or the like. Another and related object is to accomplish the primary object by shielding the spark plug used with the engine of such vehicles. Such shielding of the spark plug may, within the scope of this invention, be associated with a shielding of the cable to the plug as shown and described in my Patent #1,697,822.

It is found that when radio receiving sets are carried by aeroplanes and motor vehicles equipped with internal combustion engines, that unshielded leads to the spark plugs and the unshielded electrodes in the insulators of the spark plugs radiate energy to such an extent as to interfere with the reception of the radio waves by the receiving sets. In my prior patent provision was made for shielding the cables to the plugs. In the present case provision is made to shield the electrode within the plug and the latter device is to be associated with the shielded cable by utilizing a common ground connection, preferably by electrically uniting the metal sheath of the cable with that of the plug and grounding the latter to the metal shell of the plug.

In the drawing illustrating an embodiment of the invention the figure is a view in elevation of a plug and its lead shielded to accomplish the object set forth.

Referring to the drawing by reference characters, numeral 3 represents a spark plug having a shell 5, threaded at its lower end as at 7, to be mounted in an opening in the cylinder block, not shown. The spark plug shell is provided with a terminal 9 and an electrode 11, insulated from the metal shell. The electrode 11 extends from a position adjacent the terminal 9, up through the plug to a point 12, where it is to be placed in electrical contact with the extremity of a suitable high tension wire 13. The spark plug is covered by a cap 21, preferably of Bakelite. Within the cup is screwed a ring 22, to which is secured one end of spring 24. The spring engages the end 12 of the electrode and also the end of the high tension lead 13, when the parts are assembled. The high tension lead is to be covered by suitable insulation, represented by numeral 17, and the latter is to be covered by a metal sheath 19. The spark plug cap 21 is plated with a copper coating 23 or otherwise covered by a metallic surface. Such

a metallic surface may be provided in the act of molding the Bakelite cap or it may be placed over the cap after its manufacture. As shown at 25, the sheath of the wire 13 is in metal-to-metal contact with an extended end of the metal cover 23 of the Bakelite cap. Hinge clamps 27 are shown as pivoted at 29 to the cap. Springs 31 seated against internal projections 33 of the clamps and against external projections 35 of the cap are operative to press the ends of the clamp 37 against the hexagonal portion 39 of the plug, and thereby to hold the ends of the plated surface 41 firmly against the grounded metal shell 5 of the plug. As a result of this construction, the electrode extending through the plug is completely shielded by the plated or metal surface surrounding the Bakelite cap and the electrode is so protected that it is incapable of radiating energy in a way to interfere with the reception of radio waves by the receiving set. When, as shown in the drawing, this expedient is associated with the shielding of the high tension leads to the spark plugs, a substantially complete avoidance of interference is attained.

The device is readily assembled by placing the cap over the spark plug, the end of the electric wire 13 making contact with the electrode as at 12 through the instrumentality of the spring 24, in the act of assembly. The parts are then secured to the plug by the use of the clamps 27. The clamps 27 not only hold the cap on the plug but also by the engagement of sheath 23 with the metal surface of the plug, insure the grounding of the sheath 23. Since furthermore, the sheath of the wire 13 is in electrical contact with the sheath 23 of the plug, this one ground connection provides for both sheath 19 and sheath 23.

I claim:

1. In combination with a spark plug, having a metal shell, an insulating cover for said plug, a metallic sheath encompassing said cover, and means structurally independent of the plug for engaging the same to thereby detachably hold said insulating cover thereupon, and to ground said metallic sheath upon the metal shell of the plug, so that the cover may be removed without disorganizing the plug.

2. The invention defined by claim 1 together with a lead connected to said plug, said lead having a metallic sheath in electrical contact with the sheath of the plug.

3. In a detachable shield construction for a spark plug employing a rubber covered high-tension lead wire, means for electrically connecting

said lead wire to the plug terminal, an electrically continuous metallic covering extending from the metal base of the plug over its exterior and over the outside of said high-tension lead wire, an insulating member within said covering surrounding the spark plug terminal and upper portion of said spark plug insulator for supporting said high-tension lead wire and for spacing said metallic covering away from the rubber at the end portion where the rubber tends to become hot in service, and which insulator is spaced apart from said spark plug terminal and from the upper part of said spark plug insulator, and means for detachably securing said shield to the spark plug with which it is used.

4. A detachable shield construction for a spark plug comprising a hollow insulator fitting over the plug terminal and surrounding the spark plug insulator and which insulator is spaced away from said parts, said insulator having an aperture in its wall adapted to admit a high-tension cable, means within the insulator for electrically connecting the cable conductor to the plug terminal, an electrically continuous metal sheath adapted to extend over the outside of the plug, the insulator and the cable, and means carried by said shield for detachably securing it to a spark plug.

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