

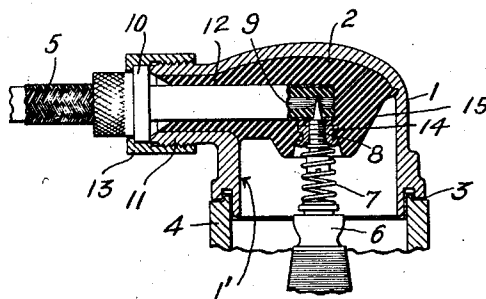
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SPARK PLUG SHIELD

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## UNITED STATES PATENT OFFICE

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## SPARK PLUG SHIELD

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mesne assignments, to Bendix Aviation Cor-  
poration, South Bend, Ind., a corporation of  
Delaware

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5 Claims. (Cl. 123—169)

My invention relates to spark plug shields, particularly adapted for use in conjunction with aviation engines.

The use of radio shielding caps for spark plug cooler chambers of aviation engines is well known in the art. Heretofore, these caps have been completely filled with insulation material which partially extends down into the cooler chamber and in practice, particularly with the new high speed engines, it is found that the intense heat radiating from the spark plug causes the insulation to become so hot it frequently results in deterioration, charring or burning of the high tension wire. Also it is found that overheating of the insulation causes it to separate from the walls of the cap, forming a dead air pocket, which interferes with the heat flow from the insulation through the walls of the cap to the air.

It is an object of the present invention to provide a radio shielding cap designed so that an air space is provided around the side walls of the cap and between the terminal of the spark plug and insulation, so as to permit the heat radiating from the spark plug to be partially dissipated through the side walls of the cap, thus preventing overheating of the insulation and consequent charring or burning of the high tension wire.

A further object of the invention resides in providing an insulation material for the cap having approximately the same co-efficient of expansion and contraction as the cap which prevents separation of the insulation from the cap, thus maintaining the heat flow from the insulation through the cap to the air, preventing overheating of the insulation.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the drawing, forming a part of this specification and in which like numerals are employed to designate like parts throughout the same.

The figure is a vertical sectional view of the radio shielding cap.

In the drawing, wherein for the purpose of illustration, I have shown a preferred embodiment of the invention, the numeral 1, denotes the body of the cap which is preferably constructed of aluminium silicon alloy or other equivalent material. The cap is substantially dome-shape having at one side, near the top thereof, a tubular extension 11 through which the high tension wire 9 is inserted. The top of the cap is filled with insulation material 2, which is preferably a mica "Bakelite" compound or equivalent material hav-

ing approximately the same co-efficient of expansion and contraction as the material of the cap. The insulation material is moulded in the cap and extends into the extension 11 having a longitudinal bore 12 centrally of the extension to receive the high tension wire 9. A collar 10 on the high tension wire connects with the radio shielding 5 on the wire and a screw cap 13 threaded on the end of the tubular extension 11 connects the collar with the body of the cap 1, 10 to complete the ground connection. The lower edge of the cap 1 is fitted on the upper end of the cooler chamber 4 surrounding the spark plug 6 and a shim 3 of suitable heat retarding material is interposed in the joint to prevent heat from passing between the walls of the chamber and walls of the cap. The mass of insulation material 2 terminates approximately one-half the height of the cap in spaced relation to the terminal of the spark plug 6 and a threaded bushing 14 is embedded in a central aperture which communicates with the inner end of the bore 12. A piercing screw 8 is screwed into the bushing and is adapted to pierce the insulation of the high tension wire 9 and establish connection with the conductor wire. A spring contact 7 suspended from the head of the screw 8, establishes connection between the screw and terminals of the spark plug. The insulation material 2, at its sides, is bevelled, as at 15, to form a recess between the side walls 1' of the cap and the insulation material, so that the side walls of the cap are completely free of insulation material, thus permitting the heat radiating from the spark plug to be dissipated through the side walls.

In use, it will be seen that since the insulation material and material of the cap have approximately the same co-efficient of expansion and contraction, the insulation will not separate from the walls of the cap and thus form dead air pockets to interfere with the flow of heat from the insulation through the walls of the cap. The spacing of the insulation material from the terminal of the spark plug and the space surrounding the walls of the cap, permit the heat radiating from the spark plug to be partially dissipated through the walls of the cap, which prevents overheating of the insulation and consequent charring or burning of the high tension wire.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that certain changes in the shape, size and arrangement of the parts may be made without

departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:—

1. A radio shield for spark plugs comprising  
5 a cap, a mass of insulation material moulded in said cap adapted to receive an electrical conductor and means establishing electrical connection between the electrical conductor and the spark  
10 plug, said insulation material terminating within said cap above the spark plug and free from the side walls of the cap, the mass of insulation material having a downwardly projecting annular rib surrounding said electrical connection.
2. A radio shield for spark plugs comprising a  
15 cap and a mass of insulation material moulded in said cap adapted to receive an electrical conductor, said insulating material terminating above the lower end of said cap and free from the side walls thereof.
3. In combination with the cooler chamber of  
20 an engine spark plug, a radio shield cap fitted on top of the cooler chamber, a mass of insulation material moulded in the top of said cap, in vertical spaced relation to the spark plug, adapted  
25 to receive an electrical conductor and means establishing electrical connection between the

electrical conductor and spark plug, said insulation material having a downwardly projecting annular rib surrounding said electrical connection.

4. In combination with the cooler chamber of  
5 an engine spark plug, a radio shield cap fitted on top of the cooler chamber adapted to receive an electrical conductor, a mass of insulation material moulded in the top of said cap around the conductor, said material being spaced  
10 vertically from the terminal of the spark plug and free from the sides of the cap and means establishing connection between said conductor and spark plug.

5. In combination with the cooler chamber of  
15 an engine spark plug, a radio shield cap fitted on top of the cooler chamber, a heat retarding shim interposed in the joint between said cap and cooler chamber, a mass of insulation material moulded in the top of said cap adapted to receive an electrical conductor, said insulation  
20 material having its lower face terminating within said cap in vertical spaced relation to the spark plug and its sides spaced from the side walls of the cap, and means establishing connection between said conductor and the spark plug.

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