

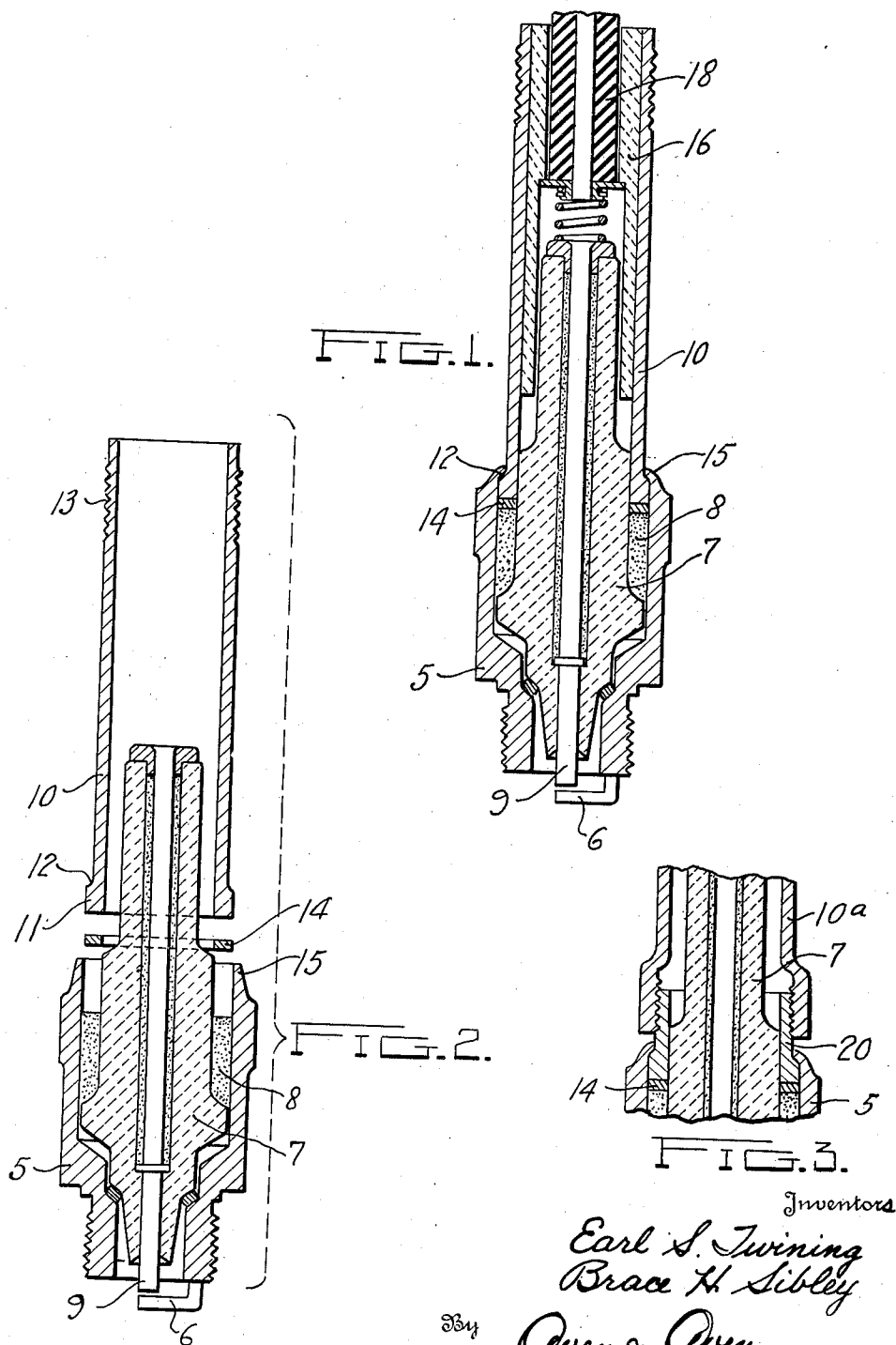
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SHIELDED SPARK PLUG

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SHIELDED SPARK PLUG

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5 Claims. (Cl. 123—169)

This invention relates to radio shielded spark plugs and particularly to the assembly of plugs of this character. The invention has for its primary object the provision of an inexpensive spark plug which will effectively ground emanations from the ignition system having a tendency to interfere with radio reception in automobiles and aircraft.

Spark plugs having the desired "radio shielding" characteristics have heretofore been quite expensive for the reason that the materials which entered into their construction were costly and could be assembled only with difficulty. The exception to this was in plugs of the so-called "can" type in which a shield was fixed over a standard spark plug. A disadvantage of this type, however, was in the fact that the heat distribution of the spark plug was upset by the shield so that the plugs ran hotter than usual and occasionally beyond the range for which they were designed.

The present invention includes a spark plug having a separate shield barrel which is made functionally integral with the plug in assembly and which overlies a body of compacted powder or other insulating material of excellent heat conduction characteristics, the barrel being held in place merely by rolling in a portion of the adjacent spark plug shell. By this construction an inexpensive and highly efficient shielded spark plug is provided which may be constructed of materials of relatively low cost.

Further objects and advantages of the invention will become apparent from the following specification, reference being had to the accompanying drawing, in which:

Figure 1 is a center vertical section, with the electrodes in full, of an assembled spark plug in accordance with the present invention;

Fig. 2 is a composite view of the parts prior to the last assembling operation, and

Fig. 3 is a fragmentary sectional view of a modified form of the invention.

Referring to the drawing, the spark plug includes the usual metallic shell 5 which carries a ground electrode 6. A ceramic insulating body 7 is held within the shell by a body of compacted powder 8 and in turn supports the center electrode 9. The parts so far described may advantageously be assembled in accordance with the disclosure of Dewar Patent No. 2,072,087, dated March 2, 1937.

Instead of forming a shielding barrel and the spark plug shell from a single piece of material, which forming operation is accomplished by con-

siderable waste, the present invention provides a separate shielding barrel 10 which may be of any suitable material similar to or different from the material of the shell 5. In the preferred embodiment of the invention, the barrel 10 is upset at one end as at 11 to provide an angular shoulder 12, and is threaded at its upper end as at 13 for the reception of the usual harness.

The body of compacted powder 8 is made to stand at a predetermined height in the interior of the shell 5 and, in assembly, a gasket 14 of copper or other material having a very high heat conductivity, is placed immediately over a compacted powder. The barrel 10 is then inserted over the gasket in the shell 5 and an upwardly extending tapered flange 15 is rolled in over the shoulder 12 of the barrel to hold the latter tightly in place in electrical contact with the shell and in heat transfer relationship with the gasket 14.

An insulating sleeve 16 is subsequently introduced into the barrel 10 either alone or as a part of the harness which carries the usual ignition cable 18. The sleeve 16 is sufficiently long so that it enters the barrel well beyond the end of the center electrode 9. The dielectric path between the upper end of the center electrode and the nearest adjacent exposed portion of the barrel 10 is thus sufficiently long to prevent arcing between these two surfaces.

In the modification shown in Fig. 3, the shield barrel includes an extension 10^a received in threaded engagement with a bushing 20, which latter is fastened into the shell in the same manner as the shield barrel 10 of the form previously described. This construction provides a two-piece shield barrel which may be made of inexpensive materials and which is adapted for assembly on the Dewar machine so that the shell and center assembly parts are standard. If desired, the barrel 10^a may be lined with insulating material, or a separate insulating sleeve similar to the sleeve 16 may be inserted within the barrel.

What we claim as new and desire to secure by United States Letters Patent is:

1. A spark plug of the class described including a spark plug shell having an initially open upper end, a body of compacted insulating and holding material disposed within said shell to a predetermined height, and a separate shield barrel inserted within said shell in heat transfer relationship both with said shell and with the compacted insulating and holding material.

2. A spark plug of the class described includ-

ing a spark plug shell having an initially open upper end, a body of compacted insulating and holding material disposed within said shell to a predetermined height, a separate shield barrel inserted within said shell, a shoulder on said shield barrel and an inturned extension on said shell in contact with said shoulder whereby said shield barrel is held in electrical contact and heat transfer relationship with said shell and said compacted insulating and holding material.

3. A spark plug of the class described including a spark plug shell having an initially open upper end, a body of compacted insulating and holding material disposed within said shell to a predetermined height, and a separate shield barrel having a portion inserted within said shell in heat transfer relationship both with said shell and with the compacted insulating and holding material.

4. A spark plug of the class described including a spark plug shell having an initially open upper end, a body of compacted insulating and

holding material disposed within said shell to a predetermined height, and a separate shield barrel including a threaded bushing inserted within said shell in heat transfer relationship with said shell and with the compacted insulating and holding material, and an extension threaded on to the outer end of said bushing.

5. A spark plug of the class described including a spark plug shell having an initially open upper end, a body of insulating material having a portion disposed within said shell and standing at a predetermined height, a separate shield barrel inserted within said shell in heat transfer relationship with said insulating material, a shoulder on said shield barrel and an inturned extension on said shell in contact with said shoulder whereby said shield barrel is held in electrical contact and heat transfer relationship with said shell and said insulating material.

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