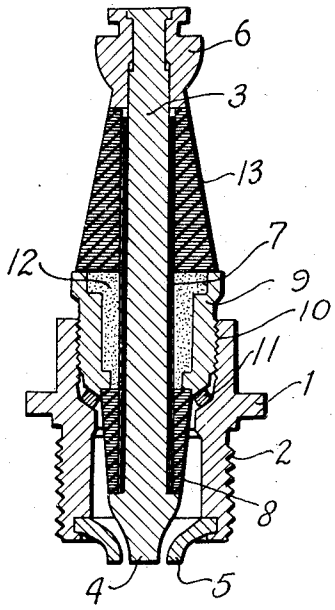
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MICA INSULATED SPARK PLUG

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MICA-INSULATED SPARK PLUG

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2 Claims. (Cl. 123—169)

This invention relates to a mica-insulated spark plug and has as an object the elimination of corona action, as will more fully appear from the detailed description.

In the accompanying drawing forming a part of this specification, there is shown a longitudinal cross-section of a plug embodying one form of the invention. In this plug there is the usual shell 1 screw threaded at 2 for mounting in the cylinder of an internal combustion engine or the like. The usual central electrode 3 has its inner end 4 in sparking relation with a member 5 mounted on shell 2. The outer end of the electrode is provided with a suitable connection 6 for receiving electric current.

Between end 4 and connector 6, the electrode is provided with a sleeve 7 which is preferably formed from a thin sheet or sheets of mica wound about the electrode as a cigarette paper is wound around a cigarette, and commonly referred to in the trade as the mica cigarette, and for brevity called the cigarette hereinafter.

Surrounding the inner end of the cigarette, above shouldered end 4, there is an insulating member 8, indicated as being formed from mica washers. A holder 9 screw threaded at 10 into the upper end of the shell contacts the upper end of insulating member 8 and makes a gas tight connection with the shell by means of a suitable gasket 11. Inside of holder 9 and between it and cigarette 7, there is an insulating body 12, preferably formed of compacted powder such as described in my Patents Nos. 2,020,966 and 2,020,967 and in my co-pending application Serial No. 63,752, filed February 14, 1936. Above shell 9 and insulating material 12 and below connecting member 6, an insulating body 13 surrounds the mica shell. Insulating body 13 is indicated as being formed of mica washers.

In general construction, this spark plug is quite similar to plugs which have been in use. However, it has been customary in mica plugs to hold the central electrode in place and form a gas tight joint between the holder, electrode and intermediate insulating material by means of metal wedged against the intermediate portion of the mica cigarette, an example of this construction being shown in my prior Patent No. 1,968,314. In mica plugs provided with such metallic holders in contact with the exterior of the mica cigarette, there is a common phenomenon referred to as "corona" which consists in a visible spark or arc apparently under the washers which surround the mica cigarette and commonly occurring at both ends of the metal contact with the intermediate portion of the cigarette. This corona action must be distinguished from flash-over, where the spark jumps across the outside of the insulation, this latter customarily occurring only when the regular spark gap is wide. The corona action described frequently occurs with even a very narrow spark gap, especially when the plug is operating under high pressure.

I have discovered that this corona action results from the metallic holder pressed against the outside of the mica cigarette, and avoid the corona action by the use of insulation material 12 in place of metallic holding material pressing against the mica cigarette. The compacted insulating powder employed in this way performs the function of the usual metal holder in firmly gripping the exterior of the mica cigarette and pressing it against the central electrode, thus holding the central electrode in proper position, and forming a gas tight joint, and at the same time, because of its non-conducting character, it eliminates the corona action mentioned above and, therefore, forms a more satisfactory plug.

It will be readily understood that departures may be made from the exact form and shape of the parts illustrated, within the scope of the appended claims.

What I claim is:

1. A spark plug comprising a shell having a central holding portion, a central electrode, a mica cigarette surrounding the electrode, powder compacted between the cigarette and the holding portion of the shell, and self-sustaining insulating material surrounding the mica cigarette above and below the powder and in contact with the powder for a material distance outward from the cigarette.

2. A spark plug comprising a shell having a central holding portion, a central electrode, a mica cigarette surrounding the electrode, powder compacted between the cigarette and the holding portion of the shell, and mica washers surrounding the mica cigarette above and below the powder and in contact with the powder for a material distance outward from the cigarette.

OTTO C. ROHDE.