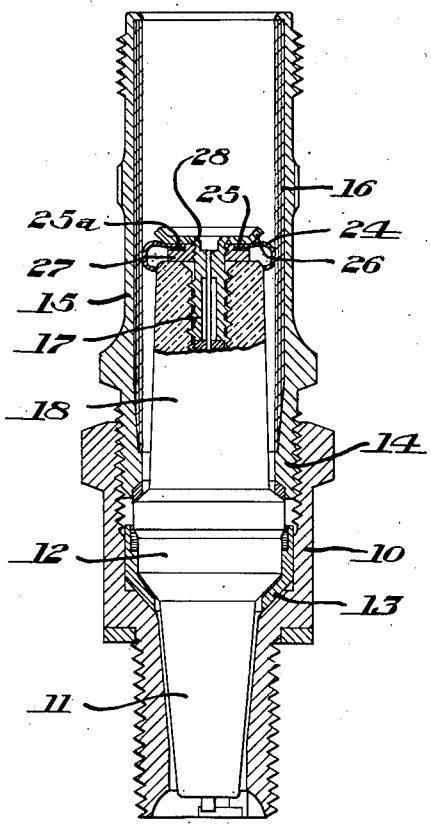
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SPARKING PLUG

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SPARKING PLUG

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This invention relates to sparking-plugs. It has been found that in some circumstances of use, for example on aero-engines, sparking-plugs are subject to intense vibration including vibration of a very high frequency which is deleterious to the mechanical construction of the plug. In plugs in which a ceramic insulator is used for the central electrode, this electrode is secured in the body of the plug by gripping an enlargement of the insulator which is situated between its ends, near the middle of its length so that the two ends of the insulator project therefrom and are unsupported laterally, since it is desirable to provide an air-space around them. The outer end of the plug, that is to say the end carrying the terminal to which the high-tension lead is connected, is in some circumstances of substantial length and being unsupported laterally the vibration effects above mentioned have been found in some cases to cause a fracture or failure of the upper end of the insulator, and the object of the present invention is to provide an improved construction whereby such failures are prevented.

The accompanying drawing which illustrates this invention is a central longitudinal section of a sparking-plug and associated screening tube.

The main body of the plug is indicated at **10** with a ceramic insulator **11** which is secured in place by means of an enlargement **12** of the insulator which is gripped between an internal shoulder **13** on the body of the plug and the open-ended member **14** which is screwed into the body of the plug. The usual screening tube **15** is secured in the member **14**, and is provided with an internal layer of insulating material **16**. The central electrode **17** of the plug is secured in the insulator in any convenient manner. It will be seen that the insulator is supported in the body of the plug only at the enlargement **12** so that the end **18** is unsupported laterally and is therefore subject to the vibration effects above mentioned. In order to damp out or reduce the vibration, there is provided an expansible collar or ring-like member **24** which is secured to the end of the electrode **17** and presses outwardly against the inner surface or lining of the screening tube **15**. Conveniently this member is mainly barrel-shaped and has an inturned flange **25** which is gripped under a flange on the end of the electrode. For this purpose two washers **26**, **27** may be threaded on to the end of the electrode with the flange **25** between them, a spring washer **25a** being disposed under the flange **25**, and the hollow end of the electrode is spun over at **28** to retain

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the washers and flange **25** in place by pressure against the end of the insulator **18**.

The central hole in the inturned flange **25** of the barrel-ring **24** is larger than the diameter of the electrode **17**, and the third washer of springy material and of corrugated or dished form may be inserted with the flange **25** between the washers **26**, **27** so that it exerts axial pressure on the flange **25**, and by friction thereon restrains any relative lateral movement between the insulator, and the screening tube **15**.

We claim:

1. In a sparking-plug, the combination of a body, a ceramic insulator secured therein only at a point between its ends whereby the ends of the insulator are unsupported laterally, a screening tube secured on said body and surrounding but spaced radially from the end of said insulator, a barrel-shaped member engaging the inner surface of said screening tube, an inturned flange of said barrel-shaped member, and a pair of washers secured on said insulator frictionally engaging said inturned flange between them.

2. In a sparking-plug, the combination of a body formed with an internal shoulder, a ceramic insulator having an enlargement between its ends engaging said shoulder, a nut clamping said insulator against said shoulder, a screening tube rigidly secured on said nut surrounding but spaced radially from the end of said insulator, an electrode rigidly secured in said insulator, and projecting from the end thereof, a hollow barrel-shaped member engaging the inner surface of said screening tube, an inturned flange on said member, a washer threaded on the end of said electrode engaging the end of the insulator, a spring washer engaging said first-mentioned washer on one side and engaging said inturned flange on the other side, and a third washer secured on said electrode pressing said inturned flange against said spring washer.

3. In a sparking plug, the combination of a body formed with an internal shoulder, a ceramic insulator formed with laterally extending shoulders between its ends, one of said shoulders engaging the shoulder of said body, a nut screwed into said body and engaging the other shoulder of the insulator, a casing rigidly secured to said body and surrounding the end of the insulator in radially spaced apart relationship, a central electrode in said insulator, a hollow ring-like member engaging the inner surface of said casing and secured to the end of said insulator.

4. In sparking plugs having a body, a ceramic insulator firmly fastened in the body so that an

end of the insulator extends outwardly from the body and a screening tube rigidly secured to the body in radially spaced apart relationship about the extended end of the insulator, a hollow barrel-shaped member engaging the screening tube, an inturned flange on said member adapted to engage the end of the insulator and fastening means for attaching the flange to the insulator end.

5. In sparking plugs having a body, with an internal shoulder therein, a ceramic insulator having an enlargement intermediate its ends engaging said shoulder and a screening tube threaded into the body and surrounding one end of the insulator in radially spaced apart relationship, a hollow barrel-shaped member engaging the inner surface of the screening tube, an inturned flange on said member, adapted to engage the end of the insulator and fastening means for attaching the flange to the insulator end.

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