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ALLOY

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3 Claims. (Cl. 75—172)

This invention relates to alloys and is concerned in particular with platinum metal alloys.

It is one object of my invention to provide alloys of great corrosion resistance, high melting point and great hardness and strength. It is another object of my invention to provide such alloys of great electrical resistance. It is a further object of my invention to provide such alloys of low specific gravity and low cost.

This application is a division of my application Serial No. 423,793, filed December 20, 1941, which in turn is a continuation in part of my application Serial No. 401,653, filed July 9, 1941, which in turn is a continuation in part of my application Serial No. 378,376, filed February 11, 1941.

In my aforesaiad, co-pending application No. 423,793 I have described alloys of 60% to about 95% palladium, 0.5% to 20% ruthenium, and 2.5% to 39.5% iridium. The alloys according to this invention comprise palladium, ruthenium, iridium, and rhodium. In such alloys the palladium content may be as low as about 60% and as high as about 94.5%, the ruthenium content may be as low as 0.5% and as high as about 20%, the iridium content ranging from about 2.5% to about 37%, and the rhodium content, likewise, ranging from about 2.5% to about 37%. I prefer alloys wherein the ruthenium content lies between about 1% and a maximum content of about 10%. Particularly advantageous are alloys within the limits of 80% to 94.5% palladium, 1% to 10% ruthenium, 2.5% to 10% iridium, and 2.5% to 10% rhodium, such as alloys of 80% palladium 5% ruthenium 5% iridium and 10% rhodium, or of 90% palladium 2.5% ruthenium 2.5% iridium and 5% rhodium.

In order to illustrate the properties of the alloys according to this invention, I may state that an alloy of 80% palladium 5% ruthenium 10% rhodium and 5% iridium has a tensile strength of 133,900 lbs. per square inch when hard, and of 94,200 lbs. per square inch when annealed, and an elongation of 27% on 2-inches when annealed. The alloy, likewise, possesses an electrical resistivity of 200 ohms/mil. ft. The alloys in accordance with this invention have higher melting point, greater hardness, higher tensile strength and higher electrical resistance than the alloys described and claimed in my aforesaid application Serial No. 423,793.

In its best embodiments the alloys consist entirely of palladium, ruthenium, irridum, and rhodium in the proportions specified herein, although, of course, minor quantities of other metals may be present so long as they do not substantially affect the beneficial properties and characteristics of my alloys.

What I claim is:

1. An alloy of palladium, ruthenium, iridium, and rhodium, comprising 60% to 94.5% palladium, 0.5% to 20% ruthenium, 2.5% to 37% iridium, and 2.5% to 37% rhodium.

2. An alloy of palladium, ruthenium, iridium, and rhodium, comprising 80% to 94.5% palladium, 1% to 10% ruthenium, 2.5% to 10% iridium, and 2.5% to 10% rhodium.

3. An alloy of palladium, ruthenium, iridium, and rhodium, comprising about 80% palladium, about 5% ruthenium, about 5% iridium, and about 10% rhodium.

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