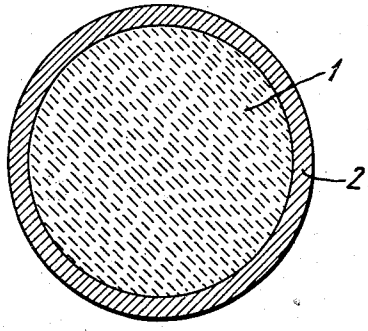
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REGULATOR RESISTANCE

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REGULATOR RESISTANCE

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1 Claim. (Cl. 201—63)

To stabilize currents in the presence of voltage variations regulator tubes so-called or iron-hydrogen resistances are often used. The latter comprise iron resistor wire confined inside a hydrogen atmosphere in a vessel. In order that tubes of this kind may be used for the regulation of currents which fall below, say, the 60-milliampere level, the wires required are so tenuous that their mechanical strength neither suffices for their production nor for their use and transportation. What should be kept in mind in this connection is that where iron-hydrogen resistances are employed in practice the demands made regarding their rigidity and strength are mostly severe. For instance, changes in their sag will appreciably affect the properties of the resistance.

Now, to make regulator tubes for currents as low as stated a thin filament of quartz or a similar material is used according to the invention, say, quartz glass. This quartz or the like filament is then coated, say, by a galvanizing process, with a film or coat of iron. The quartz filament could have a thickness of, say, 5 μ (microns), while the thickness of the iron film may be of an order of 1 μ (micron).

The stabilizing range of iron lies at temperatures ranging between grey and cherry redness, that is, around 700 degrees C. Inside this range the suggested insulators when serving as a support for the resistance coat, possess adequate mechanical strength and also sufficient insulation power. The thermal inertia is but little raised by the insulation material inasmuch as their heat conducting power is so low that it is practically only the hydrogen which produces a cooling effect upon the large outer surface of the filament that determines the temperature of the iron. Disturbances due to dissimilar heat expansion values of iron and quartz need not be feared since the tenuous film of the iron readily adapts itself to the thermal expansion of the quartz.

The drawing, to an exaggerated scale, shows the cross-section of a resistance filament according to the invention. The quartz filament 1 carries the thin iron coat 2 applied thereon by a galvanic or electro-plating process.

I claim:

A resistance element for an iron-hydrogen current stabilizing device comprising a core composed of quartz glass whose mechanical strength and insulation power are not appreciably affected when it is raised to temperatures of around 700° C., and a comparatively thin coating of iron around at least a portion of the length of said core, said iron having an effective current stabilizing range when its temperature is around 700° C.

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