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ALTERNATING ELECTRIC CURRENT RECTIFIER OF THE SELENIUM TYPE

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2 Claims. (Cl. 175—366)

This invention relates to alternating current rectifiers of the selenium type comprising a base plate or support provided with a layer or coating of selenium which may contain other substances or compounds of selenium, a counter electrode being applied to the surface of the selenium layer.

The invention is an improvement in or modification of the invention for which a patent was applied for by us in Great Britain on the 13th October, 1939, and numbered 534,043 and consisting in an improved form of counterelectrode composed mainly of tin, cadmium or an alloy of these metals with the addition of a relatively small quantity of thallium sprayed or otherwise deposited on the surface of the selenium layer or coating.

According to the present invention a relatively small quantity of mercury is added to the tin-cadmium-thallium alloy.

The invention is of particular advantage in cases in that an electric forming process is employed consisting in applying to the rectifier in the reverse direction a voltage which is high relatively to the normal voltage at which the rectifier operates.

Usually this reverse voltage is of the order of 20 volts and if this voltage is exceeded both the resistance of the rectifier in the forward direction and the so-called "bottom bend voltage" are found to increase rapidly. If, however, a small quantity of mercury, for instance, approximately 0.3% is added to the tin-cadmium-thallium alloy, the bottom bend voltage can be reduced and the forward characteristic of the rectifier improved. If a high proportion of mercury is added, however, for example 1% the rectifier tends to deform and the proportion above stated viz. 0.3% of mercury is a satisfactory compromise reducing the bottom bend voltage and still allowing satisfactory forming.

The invention is evidently not limited to the particular proportions given above by way of example and variations in this respect may evidently be made without exceeding the scope of the invention.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:

1. In an alternating current rectifier of the type comprising a layer of selenium disposed on a base plate and having applied to its outer surface a counter-electrode composed mainly of tin, cadmium or an alloy of these metals with the addition of a relatively small quantity of thallium, the improvement which consists in adding to the counter-electrode a small quantity of mercury.

2. A rectifier as claimed in claim 1 in which the counter-electrode contains approximately 0.3% of mercury, for the purpose specified.

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