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UNITED STATES PATENT OFFICE.

SAKUJI KOTERA, OF TOKYO, JAPAN.

POROUS COPPER POLE FOR CELLS.

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To all whom it may concern:

Be it known that I, SAKUJI KOTERA, a subject of Emperor of Japan, and a resident of Tokyo, Empire of Japan, have invented a new and useful Improvement in Porous Copper Poles for Cells, of which the following is a specification.

This invention relates to an improvement in copper poles for cells and especially to a porous copper pole obtained by a process in which mercury is added to copper powder produced by precipitation, to produce amalgamated copper, and thereafter the mixture is heated to evaporate the mercury.

The object of this invention is to provide a copper pole in which polarization is slow and consequently also the drops in the voltage and the current in a single fluid primary cell using such copper poles together with zinc poles, so that the cell is inexpensive and easy to handle.

My invention will be more clearly understood by reference to the following description.

To make my improved copper pole, scrap-iron is previously added to a solution of copper sulphate in which precipitation occurs. Then mercury is added to the resulting precipitate of copper, in the respective proportion of three to one by weight, to produce amalgamated copper. This amalgamated copper is heated for approximately 3 hours at a temperature of approximately 600° C., in an enclosed vessel having an exit for the mercury vapor. After evaporation of the mercury, there is left a brownish black colored mass having a specific gravity very much less than that of the amalgamated copper before heating.

The mass is capable of absorbing considerable quantity of water when water is dropped onto the mass, and also shows the brilliant metallic color of copper upon polishing.

The density and quality of the product depend on the rate of mixture, and the temperature and duration of heating. Therefore, the rate of mixture should be altered in accordance with the particular requirements.

A primary cell comprising a copper pole made according to this invention, a zinc pole, and an electrolyte of a strong solution of an alkali hydrate, needs no depolarizer and has the characteristics of allowing longer continuous service and shorter recovering periods, than has any other cell, of which I am aware and also is very easy to operate.

The copper pole of my invention can be used very effectively in secondary batteries.

Having now described and ascertained the nature of this invention, and in what manner the same is to be performed what I claim is:—

1. A process for producing copper poles for cells, comprising, forming copper powder, mixing mercury with the copper powder, and heating the resulting mixture out of contact with air.

2. A process according to claim 1, the copper powder being formed by precipitation.

3. A process according to claim 1, the mercury and copper being in the approximate proportion of 3 to 1 by weight, and the heating being performed at approximately 600° C. for approximately three hours.

4. A process according to claim 1, said heating being continued until all the mercury is driven off to leave copper only.

In testimony whereof I affix my signature in presence of two witnesses.

SAKUJI KOTERA.

Witnesses:
GEUJI KURIBARA,
MATSUZERO OTSUKA.