UNITED STATES PATENT OFFICE.

BERTRAM HUNT, OF GLASGOW, SCOTLAND.

PROCESS FOR THE PRODUCTION OF CUPROUS OXID ELECTROLYTICALLY.

1,212,062. Specification of Letters Patent. Patented Jan. 9, 1917.

No Drawing. Application filed October 7, 1916. Serial No. 124,425.

To all whom it may concern:

Be it known that I, BERTRAM HUNT, of 121 West George street, Glasgow, Scotland, have invented a certain new and useful Improved Process for the Production of Cuprous Oxid Electrolytically, of which the following is the specification.

The invention relates to that process for the production of cuprous oxid (commercially sub-oxid of copper) by the electrolysis of metallic copper, that is of copper electrodes, in an electrolyte solution of sodium chlorid, and has for its object to improve the output as regards color and its regularity.

According to the invention there is added to the electrolyte a soluble nitrate—preferably nitrate of sodium—and during electrolysis the electrolyte is maintained at a temperature above normal and preferably approaching its boiling point. It has been found that by these means an improved color of cuprous oxid is attained, which color may be varied to some extent by varying the temperature of the electrolyte and the current density. The reaction which takes place consists in the reduction of the nitrate to nitrite. If more nitrate were not added after the reduction of all to nitrite, the action would continue further with the final production of caustic soda and ammonia. In carrying out the process therefore, nitrate is continuously added to make up for that reduced to nitrite. Thus nitrite accumulates in the electrolyte. When a sufficient amount has accumulated, the electrolyte is removed and allowed to cool, whereupon the nitrite crystallizes out from the common salt solution, forming a valuable by-product. It has been found that the addition of a nitrate as set forth does not interfere in any way with the due operation of the process, and it is therefore preferable that at all times there be present in the electrolyte an excess of nitrate so that its reduction beyond the nitrite be prevented. By way of example:—It has been found that with an electrolyte consisting of a 10% solution of common salt and 5% sodium nitrate maintained at a temperature of about 100° cent., excellent results are obtained. It is to be pointed out that sodium nitrate should be added in proportion to the copper acted on to satisfy the equation:—

$$Cu_2+NaNO_3=Cu_2O+NaNO_2$$

What I claim is:—

1. In the process for the production of cuprous oxid by the electrolysis of metallic copper in an electrolyte solution of sodium chlorid; the constant addition to the electrolyte of a soluble nitrate, the electrolyte being maintained at a temperature above normal, as described.

2. In the process for the production of cuprous oxid by the electrolysis of metallic copper in an electrolyte solution of sodium chlorid; an electrolyte consisting of a 10% solution of common salt and 5% sodium nitrate maintained at a temperature of about 100° cent., as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses.

BERTRAM HUNT.

Witnesses:

DAVID FERGUSON,

WILFRED HUNT.