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METHOD OF PRODUCING COPPER-COATED METALLIC ARTICLES.

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To all whom it may concern:

Be it known that I, ROY H. CHRIST, a citizen of the United States, residing at 2023 West Broad Street, Bethlehem, county of Lehigh, and State of Pennsylvania, have invented certain new and useful Improvements in Methods of Producing Copper-Coated Metallic Articles, of which the following is a specification.

The present invention relates to methods of producing copper coated metallic articles, particularly to methods of producing articles fabricated of ferrous materials having protective copper coatings, and to the novel product obtained by practicing the method.

A number of methods have been heretofore suggested whereby ferrous materials or articles may be provided with copper coatings for the purpose of protecting the same against the action of the atmosphere, etc. These methods have, however, contemplated only the application to the article in question of a coat of copper by mechanical, electrochemical or metallurgical processes, the copper or copper solution being prepared apart from the article and applied thereto by one of the processes indicated. The present invention, however, enables a copper coated article to be produced without a coating operation in the strict sense of the word, so that the protective coating is produced in a simpler and less expensive manner than any heretofore produced.

In accordance with the present invention articles or materials are fabricated of steel or iron which contain substantially one per cent or more of copper. The articles thus prepared are heated in an oxidizing atmosphere to a temperature which may vary between 1100 and 2000 degrees Fahrenheit. The heated articles are then cooled, preferably by quenching in oil or water. A coating of metallic copper is thus formed upon which is superposed a scale of iron oxide. This scale may be removed by any suitable mechanical or chemical means, leaving the copper coating. The preferred method of removing scale is by submerging the article in a bath of molten borax.

The copper film thus formed is of sufficient thickness to afford the full protection usually realized in articles coated in a more laborious and expensive manner and is so bound to the surface of the article that detachment therefrom will not occur.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. The method of producing copper coated materials or articles consisting in forming an alloy of ferrous material and copper, heating the alloy above 1100° F. in an oxidizing atmosphere and cooling the same.

2. The method of producing copper coated materials or articles consisting in forming an alloy of ferrous material and copper, the copper comprising one per cent or more of the alloy, heating the alloy above 1100° F., in an oxidizing atmosphere and cooling the same.

3. The method of producing copper coated materials or articles consisting in forming an alloy of ferrous material and copper, the copper comprising one per cent or more of the alloy, heating the alloy to a temperature between 1100° F. and 2000° F., cooling the same, and removing the scale of iron oxide.

4. The method of producing copper coated materials or articles consisting in forming an alloy of ferrous material and copper, the copper comprising one per cent or more of the alloy, heating the alloy to a temperature between 1100° F. and 2000° F., quenching the same in a liquid and removing the scale of iron oxide formed.

5. The method of producing copper coated materials or articles consisting in forming an alloy of ferrous material and copper, the copper comprising one per cent or more of the alloy, forming a scale of iron oxide on the same by heating to a temperature between 1100° F. and 2000° F. and removing the scale by immersing in a bath of molten borax.

In testimony whereof I hereunto affix my signature.

ROY H. CHRIST.