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CHROMIUM PLATED ARTICLE

No Drawing. Original application filed December 17, 1925, Serial No. 76,119. Divided and this application filed February 16, 1927, Serial No. 168,841. Renewed September 10, 1931.

My invention relates to chromium-plated articles and specifically to metal articles comprising a foundation metal and a composite coating of metals, one of which is chromium.

It is among the objects of my invention to provide means for producing an electro-plated article having an outer coating of chromium and an under coating of a metal that provides a smooth foundation for the chromium and also has reflective properties and color similar to that of chromium.

Another object of my invention is to provide a composite article having a chromium outer coating and an under coating of a metal, the electrolytic potential of which is intermediate chromium and copper.

My invention is useful in making chromium-plated articles for general use, such as ornamental hardware, and is particularly useful in the manufacture of reflectors for lighting devices and other highly polished articles that are subjected to rather high temperatures.

Metallic chromium is useful as a reflective or protective coating instead of nickel or silver. In some respects, it is preferable to nickel or silver, as it is hard and resistant to abrasion and as it has a reflectivity only slightly lower than silver. Chromium is particularly resistant to heat and to the attack of corrosive agencies existing in the atmosphere. However, it is difficult to polish chromium on account of its extreme hardness.

When an article is plated with chromium, any of the scratches or imperfections in the foundation metal appear in the chromium plate. Consequently, when scratched, the finished chromium plating is imperfect wherever a perfectly polished foundation surface is not provided. I, therefore, provide a coating of a metal over the foundation metal that is similar in color to chromium, will conceal imperfections in the foundation metal and is susceptible of being easily polished; so that when the chromium plate is deposited, a perfectly smooth reflective coating is obtained.

The intermediate metal used in conjunction with chromium and the foundation metal has an electrolytic potential intermediate chromium and copper, tin or iron so that when either copper or a metal intermediate copper and chromium is used as a foundation metal, the tendency for the chromium to corrode by reason of electrolytic action is decreased.

I may provide an article comprising a foundation metal of iron or an alloy thereof or a non-ferrous metal such as copper or an alloy thereof such as brass. I first produce a coating of cadmium on the foundation metal, preferably by electro-plating the cadmium thereon. However, I may form a cadmium blank and build up the foundation metal on the blank by electro-plating or other well known means.

The coated foundation metal is prepared for the chromium plating by carefully polishing it in order to remove all imperfections and scratches and then cleaning in order to remove all foreign matter.

The chromium is next deposited on the polished surface by any of the well known chromium plating processes. The chromium may be deposited as a lustrous coating or may be deposited in the gray form and afterwards polished, if a lustrous coating is desired. In all instances, the composite coating produced is homogeneous, resistant to corrosion and free from markings and scratches existing in the foundation metal.

The cadmium also provides a reflective coating that serves as a silver-like backing for the chromium in case the chromium plating is thin or becomes worn through and serves a purpose similar to the composite coated article described in my co-pending application, Serial No. 76,119, filed Dec. 17, 1925 of which this application is a division. The composite coating therefore provides an

article resistant to corrosion and to the effects of heat and at the same time provides a surface having high reflective properties and great hardness.

Although I have described specific embodiments of my invention, I do not wish to be limited thereto, as various changes in the details of my process and structure may be made without departing from the spirit of my invention as defined in the annexed claims.

I claim as my invention:

1. A composite article comprising successive contacting layers of copper, cadmium and chromium, the chromium forming the outer layer and being electrodeposited directly on the layer of cadmium.

2. An article of manufacture comprising a layer of metal having an electrolytical potential below iron and above and including copper in the electro-chemical series, a layer of cadmium and an outer layer of chromium.

3. The process of providing a smooth protective surface which comprises providing a metal selected from a group of metals having an electrolytical potential above and including copper and below iron in the electrochemical series, polishing the foundation metal, electrodepositing a layer of cadmium thereon and then electrodepositing a layer of chromium on the layer of cadmium.

In testimony whereof, I have hereunto subscribed my name this 11th day of February, 1927.

JOHN CORBIT.