UNITED STATES PATENT OFFICE.

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PROCESS FOR COATING METAL.

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To all whom it may concern:

Be it known that I, BENJAMIN P. ALLEN, a citizen of the United States, residing at Great Neck Station, in the county of Nassau and State of New York, have invented certain new and useful Improvements in a Process for Coating Metal, of which the following is a specification.

This invention has relation to processes for coating metal, and has for an object to provide a process and composition of matter for imparting to iron or other metallic castings, metallic articles or the like, a coating of material whereby the article is colored to resemble brass.

A still further object of the invention is to provide a process and composition of matter for the above named object, of a nature to permit the use of electricity as an agent in causing the deposit of material upon the article.

My process resembles electroplating to some extent, in that the article to be coated together with an electrode are connected to a source of current and then immersed in a suitable bath whereby the articles take on a coat of material of the desired thickness whereby the articles when dried present, to all intents and purposes the appearance of brass.

The plating or coating bath of my invention is composed of the following materials and preferably in the proportions named:

Water	80 c. c.
Acetic acid	10 c. c.
Lead chromate $PbCrO_4$	40 grains.

A suitable quantity of this solution is placed in a receptacle and heated. While the bath is hot, the articles to be coated are suspended from a suitable support and the support connected to the positive pole of a battery, generator, or other suitable source of current supply capable of generating a current of two amperes, under an electromotive force of approximately three-quarters of a volt. The articles thus constitute the anode. The negative pole of the source of current is then connected to an iron plate which is dipped into the bath thereby constituting the cathode. Attention is called to the fact that this arrangement is the reverse of that in the ordinary electro plating process wherein the articles form the cathode of the bath.

While the bath is heated, the articles are dipped therein thereby completing the circuit through the bath and after moving the articles about they are slowly removed and permitted to dry. The first dip results in the deposition of coloring matter in isolated areas, or patches, it is therefore necessary to reimmerse the articles until a uniform coating thereon has been acquired. This may require two or three dips before the desired result is obtained. However, after the articles are withdrawn from the bath and before reimmersing they must be thoroughly dried. I have found that the constant agitation of the bath to retain the insoluble lead chromate in solution insures a more rapid deposition of coloring matter upon the articles, and I have furthermore discovered that if the solution is brought to the boiling point to bring about rapid convection, the chromate will be suitably retained in suspension. If desired however, suitable mechanical means may be provided for agitating the solution.

Relative to the proportions of the ingredients named above, the same may be varied, although an excess of lead chromate should not be permitted to be present as the deposition upon the articles will be of a more or less granular character. To obviate this, an additional quantity of acetic acid may be added to the bath.

Furthermore, while it has been my experience that an electric current of the strength above named, accompanied with a small electromotive force is productive of good results, it may not be necessary to employ a current of this strength or to retain the amperage and voltage in the relation named. The current may be varied and will have to be varied if the strength of the bath, or size of the bath is varied, particularly if the bath is in a long receptacle thereby spacing the anodes and cathodes farther away, in which event an increase in the electromotive force would become necessary.

After the articles have been thoroughly coated and dried, they may be lacquered after the usual fashion. As a result, iron, steel, or other metallic articles may have imparted thereto a color strongly resembling the yellow color of brass. In this manner, iron and steel castings may be made to resemble brass castings to all intents and purposes.

While I have set forth my invention with

some particularity, setting forth the nature of the ingredients, and the proportions in which they are combined, as well as other details of operations entering into the process, nevertheless, I realize that in practice other ingredients may be substituted for those named or the proportions varied, I therefore reserve the right and privilege of substituting equivalent ingredients for those named, rearranging the proportions, or otherwise varying the steps of my process to perform the desired and contemplated results, within the spirit of the invention, and the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. The herein described process for coating metal, which consists in first immersing the article in a bath which includes in its composition, water, lead chromate, and acetic acid, and finally introducing a current of electricity through the article and bath whereby a yellow deposit is obtained upon the article.

2. A bath for coating metal, which includes water, lead chromate, and acetic acid.

3. A bath for coating metal, which includes in composition water, eighty parts, acetic acid ten parts, and lead chromate two and six-tenths parts.

4. A bath for coating metal, which includes in its composition, water eighty cubic centimeters, acetic acid ten cubic centimeters, and lead chromate forty grains.

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

BENJAMIN P. ALLEN.

Witnesses:
DANIEL S. WOOLLEY,
JAMES K. RYAN.