

UNITED STATES PATENT OFFICE.

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METHOD OF COATING METALLIC ARTICLES TO PREVENT OXIDATION.

1,247,086.

Specification of Letters Patent.

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No Drawing.

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To all whom it may concern:

Be it known that I, MYRON L. CROWE, a citizen of the United States, and a resident of Holliston, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Methods of Coating Metallic Articles to Prevent Oxidation, of which the following is a specification.

The object of this invention is to provide a method or process of treating articles of manufacture, or parts thereof, constructed of iron or steel, so as to form thereon a black or dark-colored finish or coating which is rust-resistant and which improves the appearance thereof.

My process, which accomplishes the desired purpose, consists in dipping the articles to be treated in a molten bath of caustic alkali and a nitrate of the alkali metals. Although I may use caustic potash and potassium nitrate, I preferably employ sodium hydroxid and sodium nitrate because of the excellent results secured by their use. I employ these two substances in approximately the proportion of two parts by bulk of the nitrate to three parts of the hydrate, but I may vary the proportions within fairly wide limits without noticeable change in the result upon the articles undergoing treatment. These two substances in dry form are thoroughly mixed, and after being placed in a suitable receptacle, are heated to a temperature of from 900° to 1200° F. They fuse at approximately 400° F. and when they reach 900° F. a scum appears which I have noted as roughly indicating that the bath is ready for use.

The articles to be treated, such as chains, parts of typewriting or other machines, fire arms, cutlery, hardware, etc., are dipped into the molten bath for an instant—say for a period of from 1 to 10 seconds—but usually from 3 to 5 seconds, and they are then withdrawn. Then I dip the article into a bath of water, for cooling purposes, this taking but an instant, and then I immerse it into boiling water for a short time, say for three or four minutes, the effect of which is to remove any of the material of the first bath which may have lodged in the crevices or corners, if there be any, in the article. Then the article is dried in sawdust or by any other approved method, and

then is immersed for a few moments, say 2 or 3 minutes, in a bath of boiling oil of any suitable kind. I may for example use lard oil, cotton seed oil, or other equivalent material.

As a result of the treatment I have described, the article will have formed thereon a black or nearly black finish, which is lustrous or dull according to whether or not the article had been previously polished. Iron or steel articles so treated are rust resistant, present an attractive appearance, being black or substantially so, and, due to the heat of the first bath and the subsequent step, have a hardened exterior. The process is very cheap and takes very little time.

Having thus explained the nature of my said invention, and described a way of making and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, what I claim is:—

1. A method of imparting a black or substantially black rust-resistant finish to articles of iron or steel, which includes immersing them momentarily in a bath consisting of a mixture of molten nitrate of the alkali metals and caustic alkali.

2. A method of imparting a black or substantially black rust-resistant finish to articles of steel or iron, which includes immersing them in a bath of molten sodium hydroxid and sodium nitrate heated to a temperature of approximately not less than 900° F.

3. A method of imparting a black or substantially black rust-resistant finish to articles of iron or steel, which consists in immersing them in a bath of sodium hydroxid and sodium nitrate heated to approximately not less than 900° F., and immersing the same in boiling water to remove the excess material left upon the articles from the first bath.

4. A method of imparting a black or substantially black rust-resistant finish to articles of iron or steel, which consists in immersing them in a bath of sodium hydroxid and sodium nitrate heated to approximately not less than 900° F., immersing the same in boiling water, drying the same, and immersing them in oil.

5. A method of imparting a black or sub-

stantially black rust-resistant finish to articles of iron or steel, which consists in immersing them in a bath of sodium hydroxid and sodium nitrate heated to approximately 6 not less than 900° F., immersing the same in boiling water, cooling the same by immersion in water, removing the excess material left from the first bath by immersing

them in boiling water, drying said articles, and immersing them in boiling oil.

In testimony whereof I have affixed my signature, in presence of two witnesses.

MYRON L. CROWE.

Witnesses:

GEORGE CHANDLER COIT,
CHESTER A. REED.