

United States Patent Office.

JAMES SPOONER HOWARD, OF MANSFIELD, ASSIGNOR TO HIMSELF, T. E. GROVER, OF SAME PLACE, E. ADAMS, JR., AND N. CARPENTER, OF ATTLEBOROUGH, MASSACHUSETTS.

Letters Patent No. 106,823, dated August 30, 1870; antedated August 19, 1870.

IMPROVEMENT IN COLORING GUN-BARRELS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JAMES SPOONER HOWARD, of Mansfield, in the county of Bristol and State of Massachusetts, have invented certain Improvements in Coloring Gun-Barrels and other articles, of which the following is a specification.

The object of my invention is to provide a method whereby gun-barrels and other articles can be colored with a permanent dark color, which will be durable and not liable to rust. This has not, to my knowledge, been accomplished before my invention, and, it is evident, is a matter of great importance in many cases. In the article of gun-barrels, for instance, it is very necessary, for their preservation, that they should not be allowed to rust, and no browning now known will preserve them in the field. Nickel plating will prevent rust, but will leave the barrels bright. By my invention I incorporate with the outer surface of the nickel, oxidized iron, thus filling the pores of the nickel with a permanent coloring-matter.

In browning gun-barrels, I first electroplate them with nickel or antimony in the ordinary manner, and then plate such portions as I desire with iron.

My solution for plating nickel or antimony with iron is as follows:

Two pounds pure sulphate iron.

Three pounds pure sulphate ammonia.

Ten gallons soft water.

Dissolve the sulphate iron in water, then filter into sulphate-ammonia solution. Use iron anodes. Two Smee batteries give sufficient power for the above quantity.

By plating the nickel with iron, a certain portion of the iron is incorporated with the nickel, and forms a coat upon it; but, for coloring purposes, this coat is only required to be very thin, and its thickness is according to the nature of the composition used afterward to oxidize the iron and fix its color upon the nickel.

For oxidizing the iron upon the nickel, I use a composition composed as follows:

One-half ounce copperas.

Two ounces corrosive sublimate.

Two ounces blue vitriol.

Three ounces spirits niter.

One-eighth ounce nitric acid.

Two quarts water, soft preferred.

Other materials may be used to produce a similar effect, but this composition is used, in this connection, in order to specify the details of the process of coloring. It is applied in the ordinary way of using browning compositions.

To give a brown for gun-barrels, I apply two coats of the mixture, the second coat an hour after the first, and to remain three hours, at the end of which time the color is set, and the composition can be wiped off.

To make a black, I put on four coats, allow a space of an hour between the first and second, and an hour and a half between the others.

I can also make an excellent blue for sword-blades, pistol-barrels, &c., by putting on one coat of the composition and then subjecting the metal to a heat of about 120°, which will give an excellent color, but not permanent like the others.

These details are given, but may be varied according to circumstances. They serve as a guide.

My process consists of three main features:

First, plating the article to be colored with nickel or other non-corroding metal.

Second, plating upon this a thin film of iron.

Third, oxidizing the iron.

I do not claim to have invented any new process of plating with nickel or iron, nor of oxidizing the iron, as these are all well known, and may be accomplished in any desired manner, but confine myself to the above-described process, as a whole, and the solutions for oxidizing the iron, and for plating with iron.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The above-described solution for plating nickel or antimony with iron.

2. The solution described for oxidizing the iron after it is plated upon the nickel or antimony.

3. The above-described process of coloring metal articles, by plating them first with nickel, then with iron, and then oxidizing the iron to produce the desired color.

Witness my hand.

JAMES S. HOWARD.

Witnesses:

CHAS. F. SLEEPER,

F. H. MOORE.