

# United States Patent Office.

MAYEUL BERNABÉ, OF TOULON, FRANCE.

*Letters Patent No. 61,143, dated January 15, 1867*

## IMPROVED MODE OF PROTECTING ARMOR PLATES.

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

### TO WHOM IT MAY CONCERN:

Be it known that I, MAYEUL BERNABÉ, of Toulon, in the empire of France, have invented a new or improved process or method of treating Armor Plates and other metallic articles, to render them inoxidizable; of which I hereby declare the following to be a full, clear, and exact description.

This process or method is based upon the employment of electro-metallurgy applied to cover the steel, iron, or cast-iron plates with an insulating and protective coating of copper, the effect of which, when so produced, is by a peculiar action of neutralization of the electric currents to render the plates quite inoxidizable. It is the employment and application to armor plates and to other metallic articles of this process with the view of protecting them, which form the subject of this invention. I proceed as follows:

The plates are shaped, perforated, and prepared for putting together before being submitted to the three following operations. The first operation is the cleaning. The plates are immersed in a vessel containing a suitable acid liquid. The second operation is the coating with copper by the galvanic process. The cleaned plates are placed in a bath made alkaline by cyanide of potassium. The vessel containing the bath is by preference stoneware. In the interior is a plate of copper, facing, and of the same dimensions as, the armor or other plate. The two conducting wires of a galvanic pile are placed, one in connection with the copper and the other with the armor plate, and an electric current is thereby established which causes a deposit of copper upon the armor plate; in a few hours the layer deposited is sufficiently thick to insulate or separate the iron. The third operation consists in strengthening or increasing the first layer of copper which covers the armor plate, by submitting the plate to a second galvanic coppering. For this purpose the plate already coated with copper is immersed in an acid bath of sulphate of copper, a plate of copper of the same dimensions being placed opposite the armor plate. The bath is contained in a wooden vessel, and is also traversed by an electric current from a pile. The plates should be left in this bath for from one to two days, when the coating of copper will be sufficiently thick. This process is applicable for insulating or protecting armor or other plates or articles before or after their formation or completed execution.

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

The herein-described method or process of covering the steel, iron, or cast-iron plates with an insulating and protective coating of copper for neutralizing the electric currents and rendering the plates inoxidizable.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

M. BERNABÉ.

Witnesses:

F. SUCHETLET,

L. GAVOTY.