

# UNITED STATES PATENT OFFICE.

EPHRAIM S. MORTON, OF PLYMOUTH, MASSACHUSETTS.

## PROCESS OF SURFACING TACKS, &c., WITH COPPER.

SPECIFICATION forming part of Letters Patent No. 282,754, dated August 7, 1883.

Application filed March 12, 1883. (No specimens.)

*To all whom it may concern:*

Be it known that I, EPHRAIM S. MORTON, of Plymouth, in the county of Plymouth and State of Massachusetts, have invented certain  
5 Improvements in Processes of Surfacing Tacks and other Small Articles with Copper, of which the following is a specification.

My invention is a mode of securing rapidly, and without the use of galvanic action, a thick  
10 adhesive metallic coating upon tacks, nails, and other articles of iron; and it consists in subjecting the same to agitation in an acidulated solution of sulphate of copper.

Attempts have been made to coat iron articles with copper by immersing the same in  
15 solutions of copper, sulphuric acid sometimes being added to such solution; but the results have not proved satisfactory, the deposits being thin, inadhesive, and irregular. I have  
20 ascertained that if an acidulated solution of sulphate of copper be agitated constantly during the time the articles to be coated are contained therein a thick, adhesive, and protective coating of copper will be deposited on  
25 said articles, practically equal for many purposes to an electro-deposit.

In carrying out this process I am not limited to exact proportions of the materials, but have found that the best results ensue from the  
30 solution of one and one-half pounds of sulphate of copper in six gallons of water, and one-half pound of sulphuric acid to each fifty pounds of tacks or other articles to be coated. Prior to placing in the solution any grease on

the articles may be removed by an alkali solution.

The solution and articles are placed in a water-tight tumbling-box, and are therein tumbled together or otherwise agitated for about  
40 a quarter of an hour, the agitation causing the articles to be rubbed together with much friction, so as to remove any coating that does not adhere to give place to a second more adhesive deposit, and so as to polish the surfaces, so that  
45 the coated articles leave the bath in a highly-finished condition.

I am aware that it has been proposed to tumble metal articles in sawdust impregnated with a solution of sulphate of copper and sulphuric acid; but I have not found this effective in securing a thick or a durable deposit;  
50 moreover, the sawdust prevents frictional contact of the articles with each other, and the consequent polishing of their surfaces.

I claim—

The mode described of coating metallic articles with copper, the same consisting in subjecting such articles and an acidulated solution of sulphated copper to agitation together,  
60 substantially as specified.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 8th day of March, 1883.

EPHRAIM S. MORTON.

Witnesses:

LEMUEL BRADFORD, 2d,  
DANIEL HINCHLIFFE.