

# UNITED STATES PATENT OFFICE.

LEONARD F. DUNN, OF ONEIDA COMMUNITY, NEW YORK.

## PROCESS OF NICKEL-PLATING.

SPECIFICATION forming part of Letters Patent No. 278,784, dated June 5, 1883.

Application filed November 15, 1882. (No specimens.)

*To all whom it may concern:*

Be it known that I, LEONARD F. DUNN, of Oneida Community, in the county of Madison, in the State of New York, have invented new and useful Improvements in the Process of Nickel-Plating, of which the following is a full, clear, and exact description.

This invention relates to an improved method of applying nickel-plating to iron or other inferior metal surfaces, whereby the said plating is more firmly secured and rendered more durable than by any other known process.

In practice it has been found difficult to make nickel adhere to iron and other inferior metal, especially when used as a plating of table-ware, such as knives, spoons, and forks, and other articles which are liable to be bent or sprung. The nickel, being a very brittle metal, is unable to yield to the tension and compression incident to the bending or springing of the article to which it is applied as a coating, and consequently either peels off in large scales or flies off in a fine dust when subjected to the aforesaid strains. To prevent this I place the nickel-plating between two layers of silver, the former having a great electrical adhesion for the latter, and the latter having a tendency to firmly adhere to the article to be plated. The combination of said three layers of metal forms a perfect tie, which securely fastens the plating on the article to be plated, and by a certain degree of their amalgamation imparts to the nickel sufficient elasticity to withstand to a great extent the tension and compression incident to the bending or springing of the article plated therewith. To accomplish this I first prepare the surface of the article to be plated in the usual manner, then apply thereto a thin coating of silver, then apply to the silver coating the nickel-plating to any desired thickness, and cover the latter with another coating of silver, the successive coatings being applied by the ordinary electroplating process.

In practice I find it best to remove the article under treatment from one bath to another instantaneously or without allowing the solution from one bath to dry on the article, so as to expose the metal surface to the atmosphere before introducing said article to the next bath. By this process the silver adheres firmly to the surface of the article treated, the

nickel adheres firmly to the silver-coating, and the outside coating of silver sets firmly on the nickel-plating. The nickel-plating, being held between two metals of like electrical conditions, seems to amalgamate to a certain degree with its said inclosing coats, and thus become permanently united therewith. I am able by this process to apply a much heavier coating of nickel than by any other known process, thus giving to articles formed of inferior metals a surface which is hard and durable and susceptible of fine polish.

Prior to my invention various methods have been resorted to for applying precious-metal plating to inferior metal articles. In one instance the nickel-coating has been applied directly to the inferior metal to form a base for the plating of superior metal.

In another case the finishing or precious-metal plating was applied directly to the inferior metal; and again in another case silver or other white metal capable of receiving a high polish was applied to the inferior metal and highly burnished before applying thereto the hard facing of nickel; but it is obvious that this latter process does not form as strong a tie between the metals as is obtained by passing the article under treatment from the silver bath directly to the nickel bath in the manner hereinbefore described. Neither has this peculiar method ever before been adopted; nor has the nickel-plating been inclosed between two layers of silver.

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

1. The process of securing nickel-plating to inferior metal, consisting in first applying to the latter a silver-coating and immediately passing it from the silver bath to the nickel bath, substantially as described.

2. The process of covering inferior metal with precious metal by first applying to the surface of the inferior metal a coating of silver, then applying to said silver the nickel-plating, and subsequently covering the latter with a silver-coating, substantially as described.

3. The process of covering inferior metal with precious metal by first applying to the surface of the inferior metal a coating of silver, then applying to the coating of silver a

nickel-plating, and finally covering the latter  
with a silver-coating, and in applying said  
successive coatings passing the article under  
treatment from one bath to another without  
5 exposing the metal surfaces to the action of  
the atmosphere, substantially as set forth.

In testimony whereof I have hereunto signed  
my name and affixed my seal, in the presence

of two attesting witnesses, at Syracuse, in the  
county of Onondaga, in the State of New York, this 6th day of November, 1882.

LEONARD F. DUNN. [L. S.]

Witnesses:

F. H. GIBBS,  
WM. C. RAYMOND.