

# UNITED STATES PATENT OFFICE.

AMBROSE MONELL, OF NEW YORK, N. Y.

## MANUFACTURE OF NICKEL-COPPER ALLOYS.

No. 811,239.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, AMBROSE MONELL, of New York city, in the county and State of New York, have invented a new and useful  
5 Improvement in the Manufacture of Nickel-Copper Alloys, of which the following is a full, clear, and exact description.

I have discovered that an alloy possessing many valuable properties can be made by  
10 smelting ore containing nickel and copper and producing the alloy directly in the manner substantially as explained below without the separation of the copper and nickel constituents that has been practiced heretofore.  
15 Such alloy is much cheaper to work and reduce into sheets than copper, and therefore affords a less expensive finished product, but equally non-corrodible, while it possesses about the same tensile strength and elonga-  
20 tion as soft steel of the kind generally used for boiler-plates. The alloy can be produced in this way very cheaply, because the expensive operation of separating the nickel and copper is dispensed with. It is much stronger  
25 than copper and is freely malleable, even when cast. It can be used for the manufacture of roofing-plates, ship-plates, castings, fittings, propellers, and other uses where great strength and freedom from corrosion  
30 are required. It also can be used to advantage in the manufacture of non-corrodible boiler-tubes.

35 In making the alloy I take ore containing sulfids of nickel and copper, smelt it, bessemerize the resultant matte, and then calcine the bessemerized matte to remove the sulfur and leave the nickel and copper in the form of oxids. I then reduce the oxids in a rever-

beratory furnace with carbon or other suitable reducing agent, so as to produce an alloy 40 containing, preferably, two parts of nickel and one part of copper; but this proportion may be varied by the addition of copper, if desired, or ores containing other proportions of copper may be smelted and the product se- 45 cured in accordance with my invention. Iron may also be added in small proportions—say up to ten per cent. or thereabout—when desired.

I claim—

1. The method of making an alloy of nickel 50 and copper which consists in smelting ore containing sulfids of said metals, bessemerizing the resulting matte, calcining the bessemerized product to bring the metals into 55 the form of oxids, then reducing the oxids and producing directly a malleable nickel-copper alloy without separating these metals from each other.

2. The method of making an alloy of nickel 60 and copper which consists in smelting ore containing sulfids of said metals, bessemerizing the resulting matte, calcining the bessemerized product to bring the metals into 65 the form of oxids, then reducing the oxids and producing directly a malleable nickel-copper alloy without separating these metals from each other, and then working the said alloy into commercial form.

In testimony whereof I have hereunto set 70 my hand.

AMBROSE MONELL.

Witnesses:

E. F. Wood,  
JAS. LASZBY.