UNITED STATES PATENT OFFICE.

NOAK VICTOR HYBINETTE, OF CHRISTIANSAND, NORWAY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO NATIONAL TRUST COMPANY LIMITED, OF TORONTO, CANADA.

PROCESS OF SEPARATING COPPER FROM NICKEL AND MATTE AND OTHER PRODUCTS.

1,128,313. Specification of Letters Patent. Patented Feb. 16, 1915.

No Drawing. Application filed June 5, 1913. Serial No. 701,780.

To all whom it may concern:

Be it known that I, NOAK VICTOR HYBINETTE, a citizen of the United States of America, residing at Christiansand S, Norway, have invented certain new and useful Improvements in Processes of Separating Copper from Nickel and Matte and other Products; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has for its object a process of separating copper and nickel.

In the United States patent granted to me November 28th, 1905, No. 805,969, I have described a process of refining copper-nickel matte, according to which the matte is roasted, leached, smelted and cast into anodes and also into slabs for cementation of copper from the electrolyte containing nickel and copper in the form of sulfate, thereby regenerating such electrolyte in nickel in the form of sulfate of nickel, the copper replacing the nickel of the slabs.

The cementation of copper from the electrolyte is, under ordinary conditions, impracticable with a metal slab containing 4–8% sulfur. Even when using a copper nickel alloy free from sulfur, carbon and silicon (as in my patent above referred to) I prefer to carry out the last part of the cementation on pure nickel. I have now found that this cementation is possible, and can be carried to completion in one operation by the use of slabs of nickel-copper containing 4–8% sulfur; that is, slabs cast from a blast furnace and of the same composition as the anodes used in another part of the process described in said patent, provided that these slabs have been previously used as anodes in a nickel plating tank, and thereby the surface prepared in such a way that the cementation will take place. The reason that the cementation will take place under these conditions and not on a fresh cast surface depends probably upon the fact that when a fresh cast surface is subjected to cementation there is formed thereon a coherent sheet of metallic copper, or skin, which partly, at least, prevents further cementation, whereas a surface previously used as an anode in an electrolytic bath has a porous or etched surface covered by slimes of metal and sulfids, whereby the copper is deposited on top of these slimes, or mixes with them, and comes down on the slab as a spongy mass, through which the solution can percolate. The spongy mass on the surface stands in metallic contact with the solid part of the slab, and may also be said to help the cementation simply by the larger surface which it presents.

I claim—

1. Process of separating copper and nickel by cementation, which comprises subjecting a slab of high grade copper-nickel matte to electrolytic action as an anode and then depositing on said slab, by cementation, copper from a solution containing copper and simultaneonsly dissolving nickel from the slab.

2. Process of separating copper and nickel, which comprises subjecting a slab containing copper, nickel and sulfur to electrolytic action as an anode to prepare its surface, and then depositing on said slab, by cementation, copper from a solution containing copper and nickel sulfate, and simultaneously enriching the solution in nickel content from the nickel in the slab that has been replaced by the copper.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

NOAK VICTOR HYBINETTE.

Witnesses:
M. GUTTORMSEN,
O. MILLER.