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UNITED STATES PATENT OFFICE.

VICTOR NOAK HYBINETTE, OF JACKSON, MICHIGAN, ASSIGNOR TO HYBINETTE PATENTS CORPORATION, OF JACKSON, MICHIGAN.

NONCORRODIBLE STRUCTURE.

No Drawing. Application filed July 11, 1927. Serial No. 205,027.

My invention relates generally to a metal alloy and the products thereof, and has for its principal object the provision of an aluminum alloy that is non-corrodible and non-tarnishing.

In U. S. Letters Patent No. 1,579,481, issued to Victor Evers Hybinette April 6, 1926, in co-pending application for U. S. Letters Patent filed by me February 1, 1927, Serial No. 165,246, and in co-pending application filed by Victor Evers Hybinette February 10, 1927, Ser. No. 167,346, there are described alloys that are characterized by consisting mainly of aluminum, nickel and metals of the chromium group.

At the time the aforesaid co-pending applications were filed, tests and laboratory experiments had convinced me that the alloys set forth in said applications, and the issued patent were greatly superior to other aluminum alloys, due to the fact that my improved alloys have the desirable qualities of being non-corrodible and non-tarnishing.

Since the issuance of the patent aforesaid and the filing of the aforesaid patent applications, commercial scale manufacture and tests on a large scale, as well as additional laboratory experiments have convinced me that the main alloying elements, viz, copper and magnesium, which are now generally used in the production of light aluminum alloys, are more than anything else, the cause of corrosion and tarnishing in the finished products.

I have demonstrated that the use of silicon in the alloy is to a certain degree detrimental, but it is always present as an impurity and is valuable for casting purposes.

These alloying elements are, however, so essential in light aluminum alloys that their use, to some extent, is indispensable. The best thing that can be done, therefore, is to limit the quantity of these elements to the lowest possible point.

Tests and experiments lead me to believe that strength and hardness in a general way are helpful in all metals and alloys to make them non-corrodible, or at least to decrease their susceptibility to corrosion and tarnishing. This being the case, it would seem unnecessary to alloy and heat-treat an alloy so as to give it great strength where no strength is needed, but I have found that such strong and preferably heat-treated alloys have the advantage of being non-corrodible when they are produced as herein set forth.

My invention contemplates the production of an alloy consisting of more than 95% aluminum, with nickel, chromium, tungsten, molybdenum and manganese, or other heavy metals containing about 0.20–0.50% each of copper and magnesium.

Such alloy, to produce the best results, should be quenched at about 900° F. and aged at 200° to 400° F.

I have demonstrated that my improved alloy may be used to great advantage in the production of plumbing fixtures, and another important use for this alloy is the production of propellers for ships, where high polish and strength are equally important, but where minimum weight is perhaps the most important consideration. Also the alloy may be advantageously employed in the production of many fittings for automobiles, including radiator frames, door handles and the like.

Further, the alloy is of special advantage in the production of fixtures on ships, where the action of salt water produces relatively rapid corrosion and tarnishing. Cooking utensils and table ware may be produced from my improved alloy and in such production, it is particularly important to limit the copper content of the alloy so as to make it non-poisonous.

It has been demonstrated as set forth in my co-pending patent application and the co-pending application of Victor Evers Hybinette hereinbefore mentioned, that alloys for the purposes herein enumerated may be advantageously produced with extremely low copper, and magnesium contents by the use of nickel and small amounts of other heavy metals, preferably metals of the chromium group.

I claim as my invention:

1. A non-corrodible and non-tarnishing

aluminum alloy containing less than 2% nickel, less than 1% of metals of the chromium groups, and between 0.20% and 0.50% each of copper and magnesium.

2. A non-corrodible and non-tarnishing aluminum alloy containing less than 2% nickel, less than 1% of metals of the chromium groups, and between 0.20% and 0.50% each of copper and magnesium, said alloy being quenched at about 900° F. and aged between 200° F. and 400° F.

In testimony whereof I affix my signature.

VICTOR NOAK HYBINETTE.