

UNITED STATES PATENT OFFICE.

CRAFT C. CARROLL, OF MEADVILLE, PENNSYLVANIA.

ALLOY.

SPECIFICATION forming part of Letters Patent No. 373,221, dated November 15, 1887.

Application filed January 31, 1887. Serial No. 226,055. (No specimens.)

To all whom it may concern:

Be it known that I, CRAFT C. CARROLL, a citizen of the United States, residing at Meadville, in the county of Crawford and State of Pennsylvania, have invented certain new and useful Improvements in Alloys; 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.

My invention relates to a metallic alloy composed of the metals hereinafter mentioned, which alloy is useful in the mechanical arts, and particularly in the manufacture and formation of crowns, bridges, and plates used in dentistry.

One object of my invention is to produce an alloy which will overcome the great tendency to contraction in the use of pure aluminum for the several adaptations and requisites of dentistry.

A further object of my invention is to produce an alloy possessing lightness, stiffness, and strength, and capable of receiving a high polish, durable, and unoxidizable in the several uses for which it is designed.

In the employment of pure aluminum for the formation of crowns, bridges, or dental plates for the upper arch or jaw, where lightness of construction and specific gravity, as well as durability, are required, I have found by experiment that the tendency which said metal has to contract in cooling renders the casting of the said dentures at a single cast very unsatisfactory and partially impracticable and injurious to the mounted teeth.

To render the aluminum of practical value in casting and counteract its tendency to contract in cooling I use aluminum alloyed with silver and copper in such proportions to the aluminum as to counteract the contracting tendency of the aluminum, and thus establish an equilibrium of contraction and expansion in the alloy, which insures a perfect cast in the matrix which I desire to fill, thereby avoiding the fracture of any porcelain or artificial teeth that I may have mounted by the contraction of the pure aluminum if used alone. To overcome said difficulties and secure the valuable inherent properties of aluminum I find, after many experiments, that aluminum, silver, and copper combined

in about the proportions hereinafter stated form an alloy possessing the properties and characteristics desired, although these proportions may be slightly varied and still subserve the same purpose, viz: aluminum, ninety to ninety-three parts; silver, five to nine parts; copper, one part.

The process by which this alloy is formed is as follows: I melt the silver and copper together in a suitable crucible, and the aluminum in a separate crucible, and when said metals are melted they are thoroughly incorporated by pouring back and forth from one crucible into the other and mixed by being stirred with a polished steel rod until the whole mass becomes homogeneous, and then form the same into ingots.

I am aware that an alloy has heretofore been used wherein copper and aluminum, with one or more light-colored metals, have formed the constituent parts, and such I do not broadly claim. In the use of my alloy I obtain an equilibrium of contraction and expansion and counteract the contracting tendency of the aluminum, which has heretofore been only partially successful. For the purposes of dentistry the greatest care is necessary to prevent the fracture of the parts mounted in a support formed of certain metals, and especially aluminum. By the use of my alloy this tendency to fracture is obviated. In the alloys of aluminum heretofore employed these advantages have been only partially attainable, as the proportions of the metals therein were not such as to secure the best results, and at the same time retain the valuable inherent properties of aluminum.

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

An alloy composed of aluminum, ninety to ninety-three parts; silver, five to nine parts, and copper one part, combined and mixed substantially in the manner described, and for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CRAFT C. CARROLL.

Witnesses:

CHARLES S. HYER,
L. SEWARD BACON.