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ALLOY

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This invention relates to certain new and useful improvements in alloys.

An object of the invention is to provide an alloy especially adapted for use in the manufacture of dental castings and one that possesses unusual density, hardness or strength.

A further object of the invention is to provide an alloy of the foregoing character that possesses a high degree of resiliency, maximum expansion, and extremely high resistance to corrosion.

It is a further object of the invention to provide a dental alloy having as one of its essential ingredients a sufficient quantity of vanadium which results in an extremely clean casting surface that indefinitely maintains a high luster or polish imparted thereto, somewhat similar to the alloy known as stainless steel.

The materials that are combined and used to produce the alloy for dental use include chromium, nickel, cobalt, tungsten, silicon, vanadium, and aluminum. It is to be understood that other materials or metal possessing the characteristics of those recited may be substituted.

While the proportions of the material may be varied, both specific and critical proportions have been determined after extensive experimentation and varying proportions of the materials or ingredients and also specific and critical proportions will be recited.

A schedule showing varying proportions of ingredients to form the alloy is as follows:

Chromium	per cent	20–35
Nickel	do	10–35
Cobalt	do	10–40
Tungsten	do	2–25
Silicon	do	0.25–3.0
Vanadium	do	0.10–5.0
Aluminum	do	0.10–1.0

Nickel and cobalt combined in varying proportions should not exceed 75% of the mixture.

The use of vanadium in the varying proportions stated above with the varying proportions of the other ingredients produces an alloy for dental use possessing the objects ascribed thereto.

Critical proportions that have been determined after extensive experimentation show the following schedule:

	Per cent
Chromium	28.50
Nickel	25.00
Cobalt	25.00
Tungsten	20.00
Silicon	0.75
Vanadium	0.50
Aluminum	0.25

It has been found that the critical proportions recited in the foregoing schedule produce an alloy that is especially adapted for dental castings as shrinking of the casting in a molding operation is reduced to a minimum. The alloy is extremely highly resistant to corrosion and is especially adaptable for dental uses in view of its lactic acid resisting properties.

The use of vanadium in the critical proportion recited effects an easier flow of the alloy and produces the characteristic that when the alloy is set in cast, the surface thereof is especially clean and more readily takes a higher luster or polish.

Also the use of vanadium in the critical proportions recited produces a dense and sound casting with a maximum of expansion as well as an alloy possessing the desired resiliency essential in dentures.

The use of tungsten in the combination of ingredients produces the density and hardness of the alloy.

The vehicle of the alloy may be referred to as chromium, nickel, and cobalt, and with the addition thereto of tungsten, silicon, vanadium, and aluminum in the specific proportions recited, produces an alloy that is especially desirable for cast dentures, the alloy of this invention with the vanadium therein possessing density, resiliency, maximum expansion, and a high resistance to corrosion, as well as forming a clean casting that takes a high luster or polish.

I claim:

1. An alloy comprising chromium, nickel, cobalt, tungsten, silicon, vanadium and aluminum; the chromium being from 20% to 35%; the nickel being from 10% to 35%; the cobalt being from 10% to 40%; the tungsten being from 2% to 25%; the silicon being from .25% to 3.0%; the vanadium being from 0.10% to 5.0%; and the aluminum being from 0.10% to 1.0%; said alloy possessing ease of flow at casting temperatures, a higher yield point, a clean casting surface and a resiliency essential in cast dentures.

2. An alloy comprising chromium, nickel, cobalt, tungsten, silicon, vanadium and aluminum; the chromium being from 20% to 35%; the nickel being from 10% to 35%; the cobalt being from 10% to 40%; the tungsten being from 2% to 25%; the silicon being from 0.25% to 3.0%; the vanadium not to exceed 2% and the aluminum being from 0.10% to 1.0%; said alloy possessing ease of flow at casting temperatures, a higher yield point, a clean casting surface and a resiliency essential in cast dentures.

3. A dental alloy comprising chromium, nickel, cobalt, tungsten, silicon, vanadium and aluminum; the chromium being 28.50%; the nickel being 25.0%; the cobalt being 25.0%; the tungsten being 20%; the silicon being 0.75%; the vanadium being 0.50% and the aluminum being 0.25%; said alloy with vanadium therein in the amount specified possessing ease of flow at casting temperature, resistance to corrosion, a clean cast surface and a resiliency essential in cast dentures.

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