Patented Nov. 21, 1939

2,180,549

UNITED STATES PATENT OFFICE

2,180,549

DENTURE

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No Drawing. Application March 28, 1938, Serial No. 198,491

5 Claims. (Cl. 32—2)

This invention relates to dentures and may be characterized as an improvement upon the dentures described and claimed in my prior Patent No. 1,958,446, patented May 15, 1934.

The present application is a continuation-in-part of my copending application Serial No. 725,651, filed May 14, 1934, which has matured into Patent No. 2,135,600, patented November 8, 1938.

As set forth in my above identified copending application, I have found that alloys of higher tungsten and molybdenum content than specified in my above identified prior patent are practicable without impairing the characteristics and advantageous properties of the dentures and with additional advantageous results.

The copending application, of which the present application is a continuation-in-part, is directed to dentures with a higher tungsten content than set forth in my prior patent.

The present application is directed to dentures with a higher molybdenum content than set forth in my prior patent.

I have found that exceptional toughness and the desired resilience of the denture or denture part may be obtained by keeping the carbon content low and increasing the molybdenum content. In other words, according to the present invention, a denture or denture part formed of an alloy having cobalt as the principal constituent and containing chromium approximately ten to forty per cent and with a low carbon content has exceptional toughness, and that the desired resilience can be secured in this low carbon alloy by increasing the molybdenum content.

I have found further that dentures and denture parts made of alloys of the character more fully set forth in my prior patent but with an increased molybdenum content, and either with or without a small percentage of carbon, not only have exceptional toughness and better resilience, but also the additional advantageous property of improved resistance to acid.

The matter of the reduced carbon content which is made possible without lessened resilience by the increased molybdenum content is an important aspect of the present invention.

For a full understanding of the dentures of my prior patent and the characteristics and advantageous properties of the dentures of that patent, which characteristics and advantageous properties are preserved in the alloy dentures of the present application, reference is made here to my prior patent, and the disclosure of that patent is hereby incorporated in this application as if forming a part thereof.

I have found that the characteristics and advantageous properties of the alloy dentures of my prior patent may be retained and further improved results secured by increasing the molybdenum content. It is not possible to carry the molybdenum content quite as high as the tungsten content may be carried according to my copending application Serial No. 725,651, filed May 14, 1934, but a molybdenum content up to as high as about twenty per cent is contemplated within the scope of my present invention. According to my present invention the denture or denture part comprises an alloy having cobalt as the principal or essential constituent, and contains chromium from approximately ten per cent to approximately forty per cent and molybdenum up to approximately twenty per cent. With twelve per cent molybdenum the alloy is very tough, but with twenty per cent molybdenum, in combination with thirty per cent chromium, it is decidedly brittle. It is possible to introduce carbon to the extent of about .6 per cent into an alloy containing twelve per cent molybdenum without obtaining a brittle alloy.

To summarize, it is possible to make desirable dentures of an alloy having cobalt as the principal constituent and containing chromium approximately ten to approximately forty per cent and with a molybdenum content increased beyond that disclosed in my prior patent, either with or without a small percentage of carbon. The increased molybdenum content results in better resilience and has the further advantage of bringing about improved resistance to acid, such as hydrochloric acid. The addition of molybdenum in excess of approximately twenty per cent brings about brittleness which tends toward unusable alloys. As an alternative for avoiding brittleness, the chromium content may be reduced.

In the more specific aspects of the invention the denture or denture part comprises an alloy having cobalt as the principal constituent and contains chromium approximately ten to thirty per cent and molybdenum up to approximately twenty per cent and carbon from about .6 per cent down to substantially .0 per cent, the molybdenum content being increased in inverse proportion to the carbon content so as to provide the characteristics of high resilience combined with toughness and high resistance to acid.

The substantially carbonless alloys of this type have exhibited a resilience superior to the den-

ture alloy of my prior patent, combined with a higher degree of toughness, and have at the same time the advantageous properties of the denture alloy of my prior patent. These alloys are of practical value, not only for casting purposes in accordance with my prior patent, but for the production of wrought wires to be used in dentistry for making clasps and the like. The carbonless or substantially carbonless alloys have an advantage in that it is easier to maintain uniform physical characteristics, these alloys being very sensitive to the small variations in the carbon content which, in practical work, are very difficult to control. Some carbon is allowable, particularly in the lower molybdenum ranges approaching the molybdenum content of the denture alloy of my prior patent without causing brittleness.

In casting a denture of the alloy specified herein, it is essential to employ a mold of high refractoriness. For this purpose, the mold and casting method of my prior patent, or any other equivalent or suitable mold and casting process, may be employed. The mold and casting process more fully described in my prior patent constitute one suitable mold and casting process for casting dentures of the alloys of the present application. The mold and process of my prior patent are referred to herein, not for limiting the present invention to formation of the denture with this mold and process, but for adequately acquainting those skilled in the art with one suitable mold and process for casting the dentures of my present invention.

The casting investment material and process disclosed in my prior Patent No. 2,081,558, patented May 25, 1937, are also highly suitable and advantageous in the casting of dentures of the alloys of my present invention, and reference is hereby incorporated herein for the further details of the casting investment material and process of the last above mentioned patents as a casting investment material and process suitable for casting dentures of the alloys of my present invention.

I claim:

1. As a new article of manufacture, a denture comprising an alloy having cobalt as the principal constituent and containing chromium from approximately ten per cent to approximately forty per cent and molybdenum over five per cent and not exceeding approximately twenty per cent, said denture having the characteristic of slight shrinkage in solidifying.

2. As a new article of manufacture, a prosthetic article comprising an alloy having cobalt as the principal constituent and containing chromium approximately ten per cent to approximately forty per cent and molybdenum over five per cent and not exceeding approximately twenty per cent, said alloy prosthetic article having the characteristic of slight shrinkage in solidifying.

3. As a new article of manufacture, a denture comprising an alloy having cobalt as the principal constituent and containing molybdenum approximately tweive per cent and chromium approximately thirty per cent, said alloy denture having the characteristic of slight shrinkage in solidifying.

4. As a new article of manufacture, a denture comprising an alloy having cobalt as the principal constituent and containing molybdenum approximately twelve per cent, chromium approximately thirty per cent, and carbon up to approximately .6 per cent, said alloy denture having the characteristic of slight shrinkage in solidifying.

5. As a new article of manufacture, a denture comprising an alloy having cobalt as the principal constituent and containing chromium approximately ten to thirty per cent and molybdenum up to approximately twenty per cent and carbon from .6 per cent down to substantially .0 per cent, the molybdenum being increased in inverse proportion to the carbon content so as to provide the characteristics of high resilience combined with toughness and high resistance to acid, said alloy denture having the characteristic of slight shrinkage in solidifying.

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