Patented May 22, 1934

1,959,668

UNITED STATES PATENT OFFICE

1,959,668

ALLOYS

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No Drawing. Application July 9, 1932. Serial No. 621,751

2 Claims. (Cl. 75—1)

The present invention relates to alloys and more particularly though not exclusively to dental alloys.

An object of the invention is to provide a mercury composition or amalgam which retains the liquid property of mercury, said amalgam being combined with an amalgamating alloy, as needed, for dental fillings, the filling material having great ultimate compressive strength, freedom from objectionable setting changes, and freedom from objectionable flow under pressure, said filling material complying with other dental requirements, such as susceptibility to carving for a limited time after being prepared, absence of granular or sandy consistency, susceptibility to receiving and retaining a polish and having exceptional resistance to tarnishing.

A further object of the invention is to provide an amalgamating alloy for compounding, as needed, with mercury, thereby forming a filling material complying with the dental requirements and having the advantages above stated.

A still further object of the invention is to provide alloys such as the foregoing and having the advantages stated, with, in addition, a relatively great resistance to tarnishing effects.

A mercury composition suitable for use with amalgamating alloys for dental fillings, in accordance with the present invention, may comprise mercury and indium in varying proportions within the limit of liquidity of the composition. While indium may be present in an amount up to 50% by weight when compounded with mercury alone, the desired results for dental work can be accomplished by using a considerably less amount of indium. For example, very satisfactory results are obtained with a composition consisting of indium 5% and mercury 95% by weight.

The amalgamating alloy to be compounded with the indium amalgam may vary as to composition and relative amounts of ingredients. Where the indium has already been compounded with the mercury, the amalgamating alloy may or may not also contain indium. Such alloy may, for example, be composed of silver, tin and relatively small amounts of zinc and copper, or may be any other standard amalgamating alloy.

On the other hand, and also in accordance with the present invention, the amalgamating alloy may contain indium in an amount, for example, up to 25% by weight although a smaller amount of indium may be present and still accomplish the desired results of the present invention. For example, good results are obtained where the amalgamating alloy contains 10% by weight of indium; excellent results are likewise obtained where the amalgamating alloy contains 20% by weight of indium.

It will be evident that where an indium amalgam is employed, a relatively smaller amount of indium in the amalgamating alloy is required.

While the amount of indium in the amalgamating alloy may vary, the indium present for dental work should not be present in an amount equal to as much as 40% in weight of the amalgamating alloy.

In the preparation of alloys above referred to and containing indium, the indium is preferably combined with one of the other metals to be used, such for example as gold, by being melted therewith in a reducing atmosphere, for example in a hydrogen atmosphere, thereby avoiding the conversion of the indium, or a portion of the indium, into indium oxide.

An enriching alloy may, however, be made in this manner and consist, for example, of gold and indium in any desired proportions, and other indium containing alloys may be made by adding the enriching alloy to other metals under a non-oxidizing flux, for example, in an ordinary gas furnace, the hydrogen atmosphere in this case being unnecessary.

What is claimed is:

1. A dental amalgam comprising 5% by weight of indium and 95% by weight of mercury.

2. A dental amalgam consisting of less than 50% and more than 1% of indium, the remainder consisting principally of mercury.

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