

UNITED STATES PATENT OFFICE

2,460,595

DENTAL METAL ALLOYS

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No Drawing. Application May 25, 1945, Serial
No. 595,877. In Palestine June 26, 1944

1 Claim. (Cl. 75-134)

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There are two kinds of metal alloys for dental purposes, those rolled into sheet material and used e. g. for making crowns, and those cast for making bridges or inlays. This invention is concerned with the utilisation of the waste obtained from the sheet material. The sheet material consists as a rule of palladium, gold and silver in proportions of about 25-30%, 5-10% and 60-70% respectively and has a rather high melting point of about 1200°-1300° C. Such an alloy can be smelted by means of a hydrogen-oxygen flame only, which is not always available.

As is known, there occurs in dental technics a considerable amount of waste of the said rolled alloy, which the dentists, however, are unable to smelt and use again with the burners at their disposal, and thus are forced to deliver them to metal refineries.

This difficulty is alleviated by the present invention, according to which a new alloy has been prepared which itself is smeltable at about 1000° C., in which, when molten, the said waste material added in the proportion from two to one to one part of the new alloy easily dissolves and which together give an ultimate alloy which is suitable for dental castings, as e. g. used for clasps, bridges and hard inlays, and has a M. P. of 1000-1100° C.

The composition of the new alloy which I have found most suitable is:

Metal.....	Au	Pt	Ni	Zn	Ag	Pd	Cu
Parts by weight.....	1	1	1	1	10	13	21

In dental technics are also used alloys commonly known as "white gold," which like the above mentioned known alloys are composed of gold, silver and palladium, though the proportion of gold and silver is in this alloy approximately reversed as against the proportion in the first named dental alloy. The waste of white gold sheets is also difficult to smelt alone but it easily dissolves in a molten alloy according to my invention and then gives an ultimate "white gold alloy" suitable for dental castings. The most suitable composition to be used in connection with white gold sheet waste is:

Metal.....	Au	Pt	Zn	Ag	Pd	Cu	Ni
Parts by weight.....	30	1	1	3	4	10	1

Here too the M. P. of the new alloy is about 1000° C., the proportion of mixture is from two to one of the waste to one part of the alloy, and the M. P. of the ultimate alloy is 1000-1100° C.

The new alloys can be prepared in different

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ways. One may begin with heating a component element of a high melting point and then add in the course of the smelting process elements of lower melting points at the same time lowering the temperature. Or conversely, one can start with heating an element with a low melting point and then add elements of high melting points, at the same time increasing the temperature. The new alloys can be produced on an industrial scale and sold to dentists. Instead of ZN may be added to the alloy in the same proportion Cd, Sn or Bi.

The following examples will illustrate the use of the new alloys:

I

10 grams of ordinary dental sheet metal waste not meltable at a temperature of 1000-1100° is added to a molten alloy being 10 grams of the composition:

	Parts
Pt, Au, Ni, Zn, each	1
Ag	10
Pd	13
Cu	21

The ten grams of waste easily dissolve in the molten alloy at the above temperature.

II

10 grams of white gold sheet waste not meltable at a temperature of 1000-1100° C. are added to a molten alloy being 10 grams of the composition.

	Parts
Pt, Zn, Ni, each	1
Au	30
Ag	3
Pd	4
Cu	10

The 10 grams of waste dissolve in the molten alloy at the above temperature.

What I claim is:

An alloy composed of the following in parts by weight: 1 Au, 1 Pt, 1 Ni, 1 Zn, 10 Ag, 13 Pd and 21 Cu.

JOSEPH REICH.

REFERENCES CITED

The following references are of record in the file of this patent:

FOREIGN PATENTS

Number	Country	Date
219,452	Switzerland	May 16, 1942

OTHER REFERENCES

"Refining Precious Metal Wastes," by Hoke, 1940, pages 133 and 134.