

UNITED STATES PATENT OFFICE

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DENTAL ALLOY

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In dentistry gold alloys with at least 75% gold or gold plus platinum metal alloys are employed for orthodontic parts which must stand great stress. In these alloys which contain gold and a platinum metal a high percentage of precious metals was deemed necessary to secure a sufficient resistance against corrosion in mouth. Besides gold and platinum metals these alloys contain also silver, copper and, if desired, zinc, nickel, tin and other base metals. The content of platinum metals was increased up to 20% and more to procure the desired strength, tenacity and durability of these alloys. The alloys have nearly almost a white color.

To reduce the cost price palladium silver alloys with small additions of gold and platinum as well as pale yellow alloys with a content of about 50% gold and several percent of palladium have also been used. These alloys possess the necessary strength but not the tenacity and durability which are indispensable for numerous purposes in dentistry or they are very difficult to work.

Now I have found that alloys with 60 to 70% of gold and platinum metals have an extraordinarily high strength, tenacity and durability, if at least two platinum metals, preferably platinum and palladium, are used together. They are also very resistant against the influences of the mouth liquids. Thereby the content of platinum may exceed that of palladium but the palladium content should not be less than 1% of the whole alloy. Such alloys have an excellent hardness and strength. They are easy to work and to roll and may also be subjected to wire drawing. Their fusion point is advantageous and enables an easy casting. Their tenacity and alternating bending strength in a tempered and slowly cooled condition is very remarkable. This is especially im-

portant with respect to the use in dentistry. Furthermore, these alloys have proved resistant against tarnishing as well as against all aggressive agents which may be present in the mouth. The alloys have a pale yellow or golden tinted color.

The following table describes the various compositions and qualities of the alloys:

Per cent						Brinell hardness, soft	Number of bends wire 1 mm. soft
Au	Pt	Pd	Ag	Cu	Zn		
55	2	6	25	11.5	0.5	137	18
55	5	2	26	11.5	0.5	166	18
55	9	2	22	11.5	0.5	198	23
60	5	5	15	14	1	169	18
67	4	3	14.5	11	0.5	133	15
70	3	2	13.5	9.5	2	146	16

The alloys according to my invention may be used in dentistry for all parts which undergo a high stress such as, for instance, clasps, orthodontic appliances, root pins, tooth pins and the like.

What I claim is:

1. Dental alloy consisting of 55% gold, 2% platinum, 6% paladium, 11.5% copper, 0.5% zinc, 25% silver.

2. Dental alloy consisting of 55% gold, 9% platinum, 2% palladium, 11.5% copper, 0.5% zinc, 22% silver.

3. A dental alloy consisting of 50% to 70% of gold, 2% to 9% of platinum, 1% to 6% of paladium, 9% to 15% of copper, 0.1% to 2% of zinc, and the remainder substantially all silver, the silver constituting 13.5% to 26% of the alloy.

JOSEF LEUSER.