

UNITED STATES PATENT OFFICE.

CHAUNCEY A. FLOWER, OF NEW BETHLEHEM, PENNSYLVANIA.

METHOD OF PREPARING DENTISTS' GOLD.

SPECIFICATION forming part of Letters Patent No. 564,919, dated July 28, 1896.

Application filed September 4, 1895. Serial No. 561,456. (No specimens.)

To all whom it may concern:

Be it known that I, CHAUNCEY A. FLOWER, of New Bethlehem, in the county of Clarion and State of Pennsylvania, have invented a new and useful Improvement in Methods of Preparing Dentists' Gold, of which the following is a specification.

My invention is in the nature of a novel method of preparing gold for the use of dentists in filling teeth, whereby it can be made to weld or cohere, and thereby be made into a solid filling without the usual aid of a hand, electric, or any other form of mallet, only requiring by an ordinary skilled dentist a slight manipulating pressure with ordinary plugging instruments to be made into the most beautiful, tenacious, and durable contours as fillings in teeth.

In carrying out my method I take any form of dentists' gold, either beaten into sheets, rolled, or made into cylinders or pellets, or in the form of spongy precipitate, and place it upon mats composed of asbestos sheets, and then introduce it into a furnace-oven and heat the gold to about 1,562° Fahrenheit, at which temperature there will be presented upon the surface of the gold a gray or frosty-like appearance. I then withdraw the gold from the furnace and immediately place it in a refrigerator at a temperature of air at or below 35° Fahrenheit, or in the place thereof I may plunge it into ice-water. When cold, I place the gold on the asbestos pads and put it into a leering or annealing furnace and heat the gold to 220° Fahrenheit, and retain it there at such heat for thirty minutes and gradually allow it to cool. This gives me a grade of gold that is semicohesive. Then I again run the heat up to 350° Fahrenheit and hold it at that point for twenty minutes, which makes it a good cohesive gold.

For extra cohesive properties I run the heat up to 550° Fahrenheit, and hold it there for thirty minutes. The gold is then cooled and is ready to be weighed and packed in marketable shape.

The gold prepared as above described will cohere under a slight pressure with a serrated hand plugging instrument in the hands of an ordinary skilled dentist, and it does not require a blow with a mallet, as heretofore has been the case, and all that is required with

this gold is to add piece to piece, pressing each piece evenly and firmly one onto the other until the cavity is full, when it will be found to be one solid piece of gold that can be filed and finished to a good polish, the same as with the ordinary dentists' gold after a mallet has been used.

The first step of my process of running the gold to a high heat and then cooling instantly is to make the gold very soft and pliable, and which is the opposite effect that would be the case with steel and other metals of its class.

In gold the granules are formed near the melting-point and a sudden chill expands the granules of gold and it then is soft. When I use beaten gold, I am dealing with gold that has had its grains flattened out into thin and long fibers, but the hammer has compacted them very close together. They are, however, ready to assume their natural granular shape again as soon as released from their unnatural tension, which only can occur at a certain temperature, which is at a point near to melting or about the temperature 1,562° Fahrenheit. Each grain then commences to loosen from its companion preparatory to assuming its shape, and when suddenly chilled the grains are further separated and the gold is brought into its softest condition with all its small and delicate fibers loosened from their neighbors, and it then is in its best possible condition to be interwoven with others of a similar character and become attached together again, and by the least possible pressure to be compacted and held together by cohesive attraction.

The last heating operation is slightly above the boiling-point and serves to evaporate all moisture and to allow a better cohesion of the fibers, which are still soft and too delicate to handle roughly, but as the heat increases the fibers become more compact and tough, and by holding the heat at 350° the fibers become stiff and at the same time tough and stronger. The time (twenty minutes) during which it is held at this temperature increases the cohesive properties to its natural limit and a longer period does not increase it.

When the temperature is carried to the highest point, (550° Fahrenheit,) it further hardens and stiffens the fibers, but does not increase the cohesive properties. The only

advantage of this higher temperature is that such gold is harder and tougher, and when filled receives a higher polish than the gold held at the 350° point.

5 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The method of preparing gold for dental purposes, consisting in heating it to a temperature approximating the melting-point, to
10 establish its granular form, then suddenly cooling it to expand the granules and render the gold soft and cohesive, then again subjecting it to a heat of about 220° Fahrenheit
15 and allowing it to remain at that temperature for a period substantially as described to render it tough and tenacious.

2. The method of preparing gold for dental

purposes, consisting in heating it to a temperature approximating the melting-point, to
20 establish its granular form, then suddenly cooling it to expand the granules and render the gold soft and cohesive, then again subjecting it to a heat of about 220° Fahrenheit,
25 allowing it to remain at that temperature for a few minutes and to gradually cool, then running the temperature up to 350° to 550° Fahrenheit, holding it at that temperature for a few minutes, and then allowing it to
30 cool, substantially as and for the purpose described.

CHAUNCEY A. FLOWER.

Witnesses:

P. W. SHUMAKER,
H. G. CORBETT.