UNITED STATES PATENT OFFICE.

SOLOMON P. BUATT, OF BASTROP, LOUISIANA.

GOLD AND OTHER METALLIC AMALGAM.

SPECIFICATION forming part of Letters Patent No. 324,650, dated August 18, 1885.

Application filed October 22, 1884. (No specimens.)

To all whom it may concern:

Be it known that I, SOLOMON P. BUATT, of Bastrop, in the parish of Morehouse and State of Louisiana, have discovered certain new and useful Improvements in Gold and other Metallic Amalgams, of which the following is a full, clear, and exact description.

This discovery relates to gold and other amalgams suitable for dental fillings and other purposes, and comprises a novel process, substantially as hereinafter described, whereby pure gold or any combination of metallic gold with silver, or pure silver, may be reduced to a plastic mass with mercury and a crystallized solid be obtained which is free from all excess of atom equivalents of mercury, chemical impurities or metallic oxides injurious to health, and which shall retain the original shade or color and other desirable qualities of the gold or precious metal.

I take, for instance, gold and reduce the same by any appropriate means into a powder or fine particles, and amalgamate with mercury; or take gold alloyed or combined in any manner with metallic silver or pure silver, and after reducing the same to fine particles incorporate it with a mercurial solution of gold instead of pure mercury, or otherwise apply the same to produce a like result, and to an extent that will render the above-named metallic particles adherent. Either or any of these masses are then placed in a mortar, together with saturated solution of sulphurous-acid gas in water, and the mass thoroughly triturated with a pestle, adding chalk until all excess of mercury is absorbed, and subsequently washing the mass with water. Alcohol is then added in sufficient quantity to cover the mass, and the whole rubbed with the pestle until the mass becomes plastic, when it is again washed with water and ready for application to the purpose for which the amalgam is intended, and when the mass has been molded into the desired form and set, it is burnished with a burnishing-tool until the color of the precious metal appears on its surface. By this process of combining gold, gold alloy, or silver and mercury with sulphur, chalk, and alcohol, in the manner described, the elimination of all free mercury, or excess of its atom equivalents, is augmented, and the same remain associated as a definitely-proportioned chemical compound, and when quiescent speedily crystallize into a solid with the metal gold predominant in color, when by friction the surface is condensed and the mercurial equivalents set free by the action of the latent heat during the operation. Technically detailed, the sulphur dissolves the unassociated mercury, and while in this condition the chalk combines with it, the water holds the combination in suspension and conveys it from the mass by decantation, while the alcohol facilitates crystallization.

For dental purposes the amalgam has many advantages. Thus, it combines all the desirable properties of gold with those of amalgams as preservative plastic dental fillings, while free from the objectionable peculiarities of both. By its use, in fact, there will be no necessity of extracting even a crownless dental root, excepting for the cure of special diseases peculiar to the mouth, which renders it greatly superior to other materials used by dentists for a like purpose, while it is equally beneficial to both patient and operator, economizing time by the simplicity and ease of its application, dispensing with the mallet, rubber dam, and other pain-producing instruments, such as used for inserting solid-metal dental fillings, and in nowise exposing the system to the danger of mercurial action, as other mercurial amalgams are liable to do, and from which heat, even if raised to a volatilizing point, will not expel the deleterious properties without rendering the mass porous or disintegrating it.

Having thus described my discovery, I claim as new and desire to secure by Letters Patent—

1. The process, herein described, of producing the amalgam, which consists in first reducing into fine particles the gold, gold alloyed with metallic silver or pure silver, and amalgamating or incorporating the same with mercury or with a mercurial solution of gold, or otherwise applying the same to produce a like result, according to the nature of the base, then adding a saturated solution of sulphurous-acid gas in water and triturating the mass, also adding chalk thereto to absorb all excess of mercury, then washing with water, afterward adding alcohol to the mass and rub-

bing until the whole is plastic, and subsequently washing the mass, which is then ready for use, to be molded or set and burnished, as required, substantially as specified.

2. The within-described amalgam, in which gold or gold and silver are combined with mercury, sulphur, and chalk, and worked into a plastic mass, for use essentially as herein set forth.

SOLOMON P. BUATT.

Witnesses:
FRANK VAUGHAN,
W. E. STARSMY.