

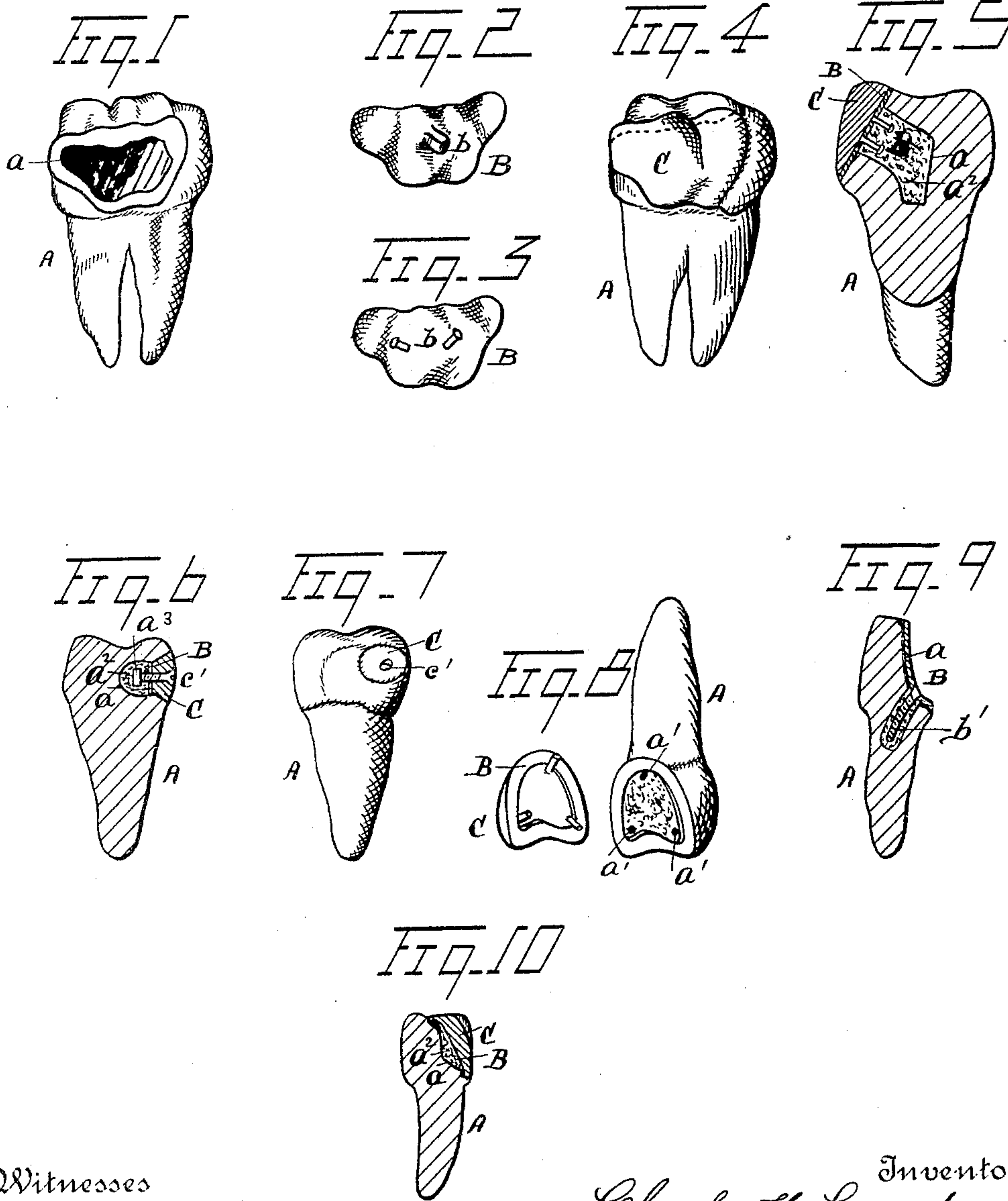
(No Model.)

C. H. LAND.

PROCESS OF RESTORING DEFECTIVE TEETH.

No. 454,566.

Patented June 23, 1891.



Witnesses  
*John Schuman*  
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# UNITED STATES PATENT OFFICE.

CHARLES H. LAND, OF DETROIT, MICHIGAN.

## PROCESS OF RESTORING DEFECTIVE TEETH.

SPECIFICATION forming part of Letters Patent No. 454,566, dated June 23, 1891.

Application filed May 25, 1889. Serial No. 312,029. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. LAND, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have  
5 invented a certain new and useful Improvement in a Process of Restoring Defective Teeth; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the  
10 art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its objects certain improvements in the art of artificial dentures, and relates more particularly to a novel method of repairing decayed teeth, as more fully hereinafter specified, and pointed out in the claims, and more fully illustrated in  
20 the accompanying drawings, in which—

Figure 1 is a side elevation of a tooth, showing a cavity therein. Figs. 2 and 3 show modifications of a matrix fitted into said cavity. Fig. 4 shows the filling fitted into  
25 the tooth-cavity. Fig. 5 is a vertical section of a tooth and filling illustrating my invention. Fig. 6 is a vertical section of a modification. Fig. 7 is an elevation of the same. Fig. 8 shows a matrix provided with fastening-pins, and a tooth to which said matrix is fitted. Figs. 9 and 10 show still other modifications of my invention in section.

In a patent heretofore granted to me in this general line of inventions—to wit, patent No 375,167, dated December 20, 1887—I  
35 described and illustrated a process of securing an impression of the cavity or lost portion of a decayed tooth by means of a thin plate of suitable metal fitted to the tooth to form a matrix or mold and conforming a filling substance to said matrix or mold to form a section or plug.

My present invention is designed as a further improvement, embracing important features of an analogous nature, and contemplates, first, the process of fitting such a matrix or mold to conform either to the exact shape of the cavity in a decayed tooth or to a previously-prepared foundation, then filling  
45 said mold or building thereupon a section corresponding to the lost portion of the de-

cayed tooth, said section composed of metal, such as gold, silver, or any other suitable metal, and attached to the matrix by melting or fusing the mass either upon the matrix or  
55 thereinto for the purpose of securing a fused section of any desired form; second, fastening a section or plug so made to the tooth in any suitable manner, and particularly, third, securing said section or plug in place by  
60 means of amalgam.

Heretofore I have specifically claimed plastic substance—such as porcelain and other vitrified materials—for a filling, fashioned into desired form by means of the matrix or  
65 mold. Special advantages, however, sometimes arise in the use of a metal substance for the filling, as of gold or silver, or other suitable metal—as, for instance, where it is desirable to reduce the length of the operation and make it less tiresome to the patient,  
70 and where also the surface to be coated is very thin between the antagonism of the upper teeth. In this instance the porcelain would not be sufficiently strong to withstand  
75 the force of mastication. I therefore resort in some cases to filling the matrix by fusing into the same any suitable metal—as, for example, filling the mold with melted gold or  
80 silver or other metal.

I carry out my invention as follows:

A indicates a tooth in which there is a cavity or decayed portion *a* to be filled or built up. The cavity or surface of the decayed tooth is properly prepared in the usual manner, after which a thin plate or foil of platinum or other suitable metal is burnished into the cavity or upon the foundation to be built upon to form a matrix B.

The matrix may be formed in the same manner as described in my patent above referred to, and may, if desired, be provided with fastening pins or loops *b* or other analogous devices, or these may be dispensed with, if preferred. In some instances the matrix  
95 may be provided with a post, as at *b'*, Fig. 9. In other cases, as shown in Fig. 8, the pins *b* may extend in angular directions, so that when engaged in corresponding sockets *a'* in the tooth they will afford a very firm fastening. In some cases before burnishing the foil into the cavity or upon the surface of a  
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decayed portion of the tooth I prefer to build up a foundation, as shown, for example, in Figs. 5, 6, and 10.

While I do not limit myself to any particular foundation, I design more particularly in this application to specify amalgam as a very suitable material, as shown at  $a^2$ . The foundation being prepared, the foil is burnished thereupon, or the foil may be burnished upon desired portions of the tooth and then the amalgam filled in for a foundation, as required. In some instances, moreover, my invention contemplates embedding an anchoring-nut  $a^3$  in a cavity, as shown in Fig. 6, said nut being embedded in any suitable cement or amalgam, as more fully set forth and claimed in a patent granted to me June 11, 1889, No. 405,167.

C denotes a metal filling or section formed of gold, silver, or other suitable metal melted or fused into or upon the matrix fashioned as above described.

The filling or section so constructed may be made to correspond to any lost portion of the tooth, and when formed may be secured to the tooth in any desired manner—as, for instance, by any suitable cement or by the use of an anchoring-screw  $c'$ , as shown in Figs. 6 and 7, engaging the anchoring-nut  $a^3$ . The screw may be constructed of the same metal as the filling, and when in place the head of the screw may be filed off and burnished. Such a method of attachment is more fully described in the above-named pending application and in United States Letter Patent granted to me April 9, 1889, No. 400,921. I design more specifically, however, in this application to lay claim to amalgam as a fastening means for securing the filling or section in place.

The compound known as “amalgam,” as is well understood, is a composite of mercury and other metals and has a peculiar affinity for gold and silver, and hence in some instances becomes a very suitable means for attaching the metal sections to the tooth. Amalgam being applied to the cavity or surface of the tooth to which the section is to be secured, it will be readily understood that a chemical union of the amalgam with the gold or silver filling quickly takes place, thereby firmly uniting the section securely in place, while at the same time the amalgam may constitute a partial foundation, as already set forth. In order that the amalgam may take hold of the gold or silver section, the platinum matrix may be suitably ground or filed away, or in burnishing the matrix into the cavity or upon the tooth-surface it may be partially burnished thereupon, so that the edges of the matrix are made to conform to

the outer edges of the cavity or tooth-surface. This will leave the interior of the matrix open, as shown, for example, in Fig. 8. It will thus be observed that after the matrix is filled then an amalgam prepared in the usual way will not adhere to the matrix, but will adhere to the gold or silver filling. This marginal matrix may be ground away, if desired, before securing the section in place. In this manner I succeed thoroughly also in establishing a thin coat of fused metal on the exterior surface of a filling, if desired, which is practically indestructible. It will be seen thus that a perfectly-flat surface can be attached without resorting to pins, loops, or countersinks. However, these other devices would only add an additional feature of security and also make the sections applicable where it is preferable to use the ordinary oxy-phosphate cements or gutta-percha. A gutta-percha fastening will be specially applicable in many instances, as where a nerve may be exposed, the gutta-percha being easily applied, and also being a non-conductor. In such instances it would be the most suitable medium of attachment for the metal sections.

Another advantage in using gutta-percha consists in the fact that in case a pulp should die in a tooth or become congested a section of this description secured in place by a gutta-percha cement could readily be unsealed almost as readily as to remove a cork from a bottle and access be had to the inflamed pulp. This method of attachment is specially suitable for children's teeth.

What I claim is—

1. The process of filling teeth by first making a mold by swaging metal foil into the cavity and then filling said mold with melted gold or other metal, substantially as set forth.
2. The process of restoring a decayed tooth by first forming a mold by swaging thin metal upon the surface of the decayed portion of the tooth, then fashioning a metal section by means of said mold and fastening said metal section in place in the tooth by means of amalgam, substantially as set forth.
3. The process of restoring a decayed tooth by first building up a foundation upon the surface of the lost portion of the tooth by means of amalgam, then burnishing upon said foundation thin metal to form a matrix, then fashioning a section by means of said matrix and fastening said section to the tooth, substantially as set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

CHARLES H. LAND.

Witnesses:

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