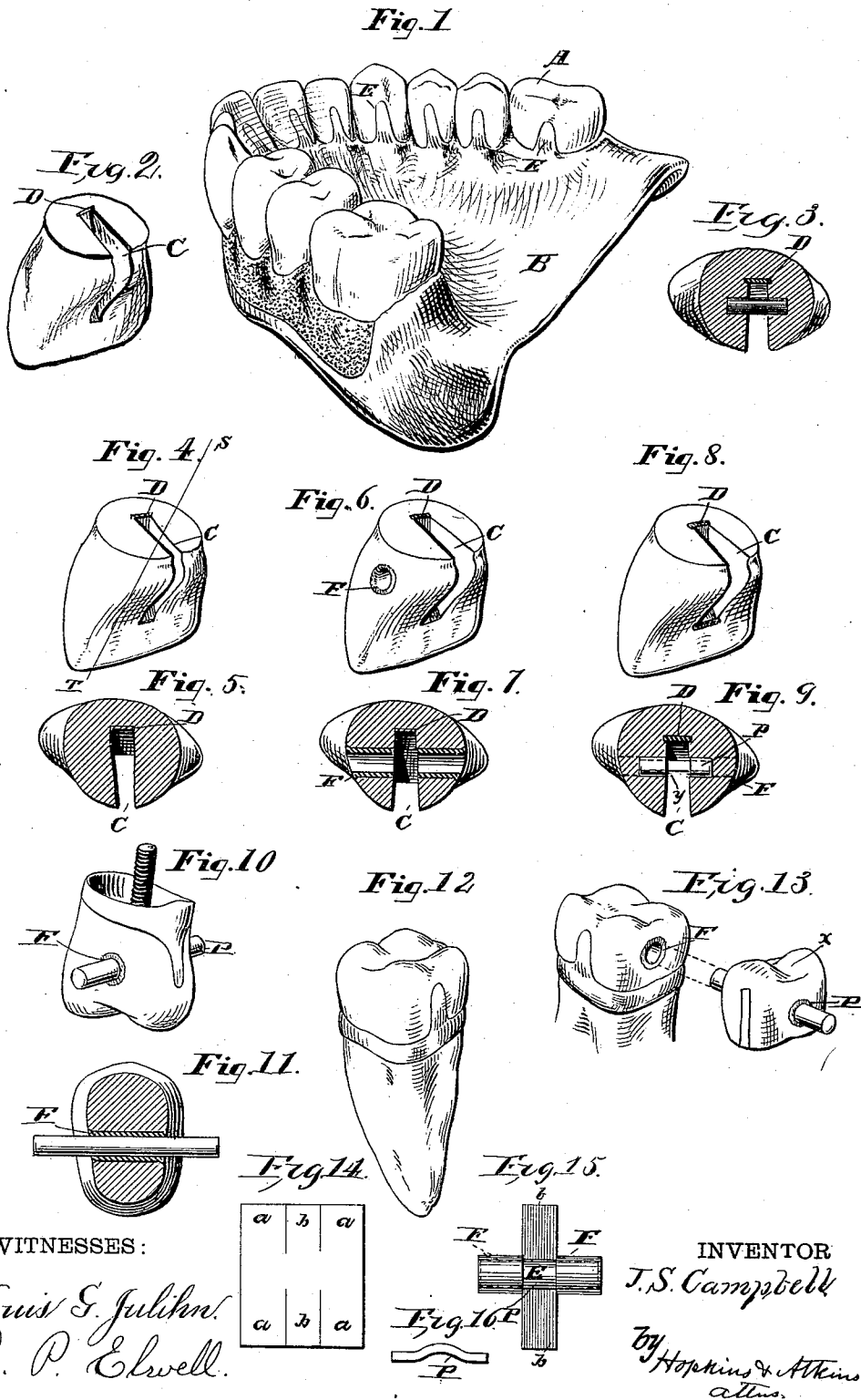


(No Model.)

J. S. CAMPBELL.
ARTIFICIAL TOOTH.

No. 465,458.

Patented Dec. 22, 1891.



UNITED STATES PATENT OFFICE.

JOHN S. CAMPBELL, OF LONDON, ENGLAND.

ARTIFICIAL TOOTH.

SPECIFICATION forming part of Letters Patent No. 465,458, dated December 22, 1891.

Application filed June 9, 1890. Renewed October 27, 1891. Serial No. 409,975. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. CAMPBELL, of London, England, have invented certain new and useful Improvements in the Manufacture of Artificial Teeth, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to improve a porcelain tooth representing a human tooth, so that it may be more firmly attached to the metallic plate by soldering, and so that it may have upon the lingual side a more natural feeling to the tongue of the wearer and be more easily cleaned by brushing or washing than ordinary artificial teeth can be.

In the drawings, Figure 1 is a perspective view of a metallic mouth-plate having artificial teeth applied to it in accordance with my invention. Fig. 2 is a perspective view of a single tooth constructed according to my invention with a narrow vertical slot in its lingual side. Fig. 3 is a horizontal sectional view of the tooth illustrated in Fig. 2, viewed from the base of the tooth and showing a pin crossing the vertical slot and embedded in the tooth structure. Fig. 4 is a perspective view of a countersunk tooth not made in accordance with my invention and having a large cavity extending from its lingual side inward and formed by excavating the main central part of the tooth structure. This large cavity is crossed by a pin embedded at its ends in the remaining shell of the tooth, which is illustrated merely to better show by comparison the distinctive character of my improvements. Fig. 5 is a perspective view of another countersunk tooth not made in accordance with my invention, but having its main central portion bored out from the base of the tooth, so as to leave a shell and having a headed pin at the bottom of the bore embedded in the tooth structure, but projecting into the cavity formed by the bore. This tooth is illustrated for the same purpose as the tooth shown in Fig. 4, whereby the characteristic merits of my improvements more clearly appear. Fig. 6 is a perspective view illustrating the ordinary way of attaching a porcelain tooth to a gold plate.

Referring to the letters upon the drawings, A in Fig. 1 illustrates a dental plate, and B

teeth secured thereto in accordance with my invention.

C in Figs. 2 and 3 indicates a tooth detached and provided with a narrow vertical slot D, preferably tapered or wedge-shaped, with its widest part at E on the lingual side of the tooth. This slot should extend to about the center of the tooth and is so narrow that it does not materially impair the strength of the tooth. Its object is to receive a thin metallic vertical backing connected with the plate, so that it will be substantially at right angles, with the edge of the plate.

P, Fig. 3, indicates a pin, preferably of platinum, extending across the vertical slot, with its ends supported in the tooth structure. This pin is molded into place in the process of forming the tooth by means of formers or molds well understood in the art of manufacturing porcelain teeth.

According to the usual method of fastening porcelain teeth to a metallic plate the gold backing is fastened flatwise to the plate on the lingual side of the teeth to two platinum pins *a*, Fig. 6, projecting from the teeth. The result is that the backing is substantially a thin flat extension of the plate upon the lingual side of the teeth. As the strain upon the teeth in use is forward and backward or in the direction of the outer and inner faces of the teeth, it will be perceived that by the ordinary method the backing is applied in such relation to the teeth and plate as to present the least resistance to bending or displacement of the teeth. As the proximal sides of the teeth are in contact, the teeth are self-supporting there. Besides, very little strain occurs in the direction of the row of teeth, it being ordinarily across the row. The attachment of artificial teeth to a metallic plate by the old method is therefore weak and insecure to resist the only strain they are liable to suffer. Besides this, another objection to it is that it gives an unnatural and unpleasant feeling when the tongue of the wearer comes in contact with the lingual sides of the teeth. Another and still greater objection is that the ordinary backing usually covers not only the lingual sides of the teeth, but also the lower parts of the spaces between the teeth upon the lingual

sides, thus making it very difficult to cleanse them. Consequently matter accumulates between the teeth on the lingual side around and under the edges of the backing and becomes offensive, and it is difficult, if not impossible, for the wearer to dislodge it. By my improvements a thin plate of suitable material to form a backing for each tooth is set into the tooth, so that the strain is always edgewise and never sidewise upon the backing. I thus secure the greatest strength possible in a tooth-backing, and at the same time I reduce the quantity of material used in the backing to the minimum. Besides this, I preserve a natural contour on the lingual side of each tooth and avoid exposing any edges of the backing, around and behind which it is possible for matter to accumulate and become foul and offensive.

In Fig. 4 is shown a tooth countersunk from the lingual side and reduced to a shell by excavation and provided with a pin crossing the excavation and lodged at its opposite ends in the shell of the tooth. This form of tooth I have been recently advised has been made to be connected by means of rubber to the plate; but it would not serve the purpose of my invention. In the first place, such a large cavity would require too much gold to fill it. In the second place, if filled with metallic solder, it would be insecure, because the contraction and expansion of the metal in so large a volume being unequal to the contraction and expansion of the porcelain shell would be liable to crack the shell or to destroy its fitting within the shell, or both.

The principle of my invention is to employ a thin backing edgewise in the narrow verti-

cal slot in the body of the tooth substantially at right angles to the general surface of the plate to which it is attached, whereby the greatest resistance to strain upon the tooth is secured with the least possible amount of metal and without projections from the lingual side of the tooth or any extended metallic surface there to come in contact with the tongue.

Fig. 5 shows a tooth, also known as a "countersunk" tooth, bored out at its base with a large opening and provided with a headed pin in the center of the bottom of the bore, with the head projecting into the bore. The object of this is to receive a volume of rubber or mastic suitable for connecting the tooth with a rubber plate. This tooth structure, it will be seen, is entirely different in principle from my own and lacks the advantages of mine, and would not be adapted for the use of metallic solder, for the reasons above stated, in respect to the tooth shown in Fig. 4.

What I claim is—

A porcelain tooth provided on its lingual side with a narrow vertical slot adapted to receive a thin backing to connect the tooth with a plate, which backing has its edges substantially at right angles with the edge of the plate where it is applied, in combination with a pin crossing said slot and having its opposite ends bearing in the tooth structure, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

JOHN S. CAMPBELL.

Witnesses:

S. G. HOPKINS,
LOUIS G. JULIEN.