

(No Model.)

J. S. CAMPBELL.
ARTIFICIAL TOOTH.

No. 465,459.

Patented Dec. 22, 1891.

Fig. 1.

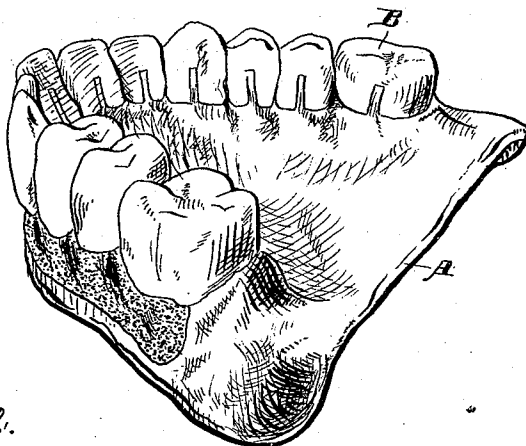


Fig. 2.

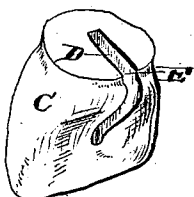


Fig. 3.

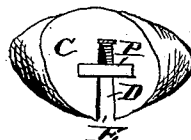


Fig. 4.

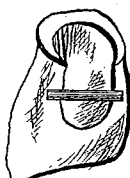


Fig. 5.

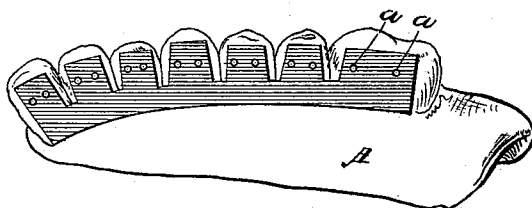


Fig. 6.

WITNESSES:

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JOHN S. CAMPBELL, OF LONDON, ENGLAND.

ARTIFICIAL TOOTH.

SPECIFICATION forming part of Letters Patent No. 465,459, dated December 22, 1891.

Application filed June 9, 1890. Renewed October 27, 1891. Serial No. 409,976. (No model.)

To all whom it may concern:

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

The object of my invention is to construct a porcelain tooth representing a human tooth so that it can be more firmly and conveniently attached to a mouth-plate by soldering, so that it may have on the lingual side a more natural contour and feeling to the tongue of the wearer, and so that it may be more easily cleaned by brushing or washing than artificial teeth can usually be.

In the drawings, Figure 1 is a perspective view of a mouth-plate having artificial teeth applied to it in accordance with my invention. Fig. 2 is a perspective view of a single tooth made according to my invention, with a narrow vertical slot in its lingual side and a thin narrow platinum plate or wire secured in the bottom of the slot. Fig. 3 is a horizontal section of the tooth shown in Fig. 2, which exhibits a platinum wire crossing the vertical slot and having its ends supported in the tooth structure. Fig. 4 is a perspective view of a porcelain tooth with a narrow vertical slot in its lingual side, said slot being widest at the bottom and narrowest upon the lingual side of tooth, and a narrow thin piece of platinum at the bottom of the slot. Fig. 5 is a horizontal section of a tooth shown in Fig. 4. Fig. 6 is a perspective view of a tooth having a horizontal tube crossing the vertical slot, passing entirely through the tooth, except that the tube is left open where it crosses the slot and on the side next the lingual side of tooth, and a thin piece of platinum at the bottom of slot. Fig. 7 is a horizontal section of the tooth shown in Fig. 6. Fig. 8 is a perspective view of a slotted tooth constructed as shown in Fig. 9. Fig. 9 is a horizontal section of the tooth shown in Fig. 8, which exhibits a porcelain tooth with vertical slot in the lingual side, a tube beginning at the side of the slot in the tooth and terminating in the tooth structure, and a thin platinum bottom to the slot, the platinum bottom and the two tubular portions being all made of one piece of platinum, as shown in Figs. 14 and 15. In Figs. 4 and 5 the

vertical slots are shown as narrowest on the lingual side of the tooth. In Figs. 2, 3, 6, 7, 8, and 9 they are shown as widest on the lingual side. Fig. 10 is a view of the crown of a tooth provided with a gold band and a pin for insertion in the cavity of a root, and a bar or wire passing through the tube to be attached to a natural tooth by gold fillings or to other artificial crowns, as shown in Fig. 13. Fig. 11 is a horizontal section of the tooth shown in Fig. 10, which exhibits a horizontal tube with a mandrel in it extending through the tooth-crown. Fig. 12 exhibits a root with a crown like that shown in Fig. 10 secured to it, except that the tube does not extend entirely through the tooth. Fig. 13 shows a tooth similar to that shown in Fig. 12, with a tooth-crown impaled on a horizontal mandrel, showing how one tooth-root may be utilized to support two tooth-crowns. Fig. 14 is a view of a piece of thin platinum plate, forming a blank which may be employed to make a tube, open where it crosses the slot and forming the platinum bottom to the slot, such as shown in Fig. 15, all to be embedded and baked with the tooth, as illustrated in Fig. 9, and adapted to receive a mandrel extending across the vertical slot in the tooth. Fig. 16 shows a platinum mandrel bent as it may be after the tooth is baked, as will be described.

My improvements relate to a porcelain tooth slotted as described, the slot extending from the lingual side in to about the center of the tooth and provided with a platinum plate or wire in the bottom of the slot, which construction adapts the tooth to be conveniently, firmly, and advantageously secured to a metal plate by soldering.

My invention also relates to such a tooth provided with a tube crossing the vertical slot and having its ends supported in the tooth structure.

My invention also relates to such a tooth provided with a platinum pin or wire crossing the slot and terminating in the tooth structure with a platinum bottom to the slot.

Referring to the letters upon the drawings, A in Fig. 1 indicates a number of teeth secured according to my improved manufacture into a metallic mouth-plate B.

C in Fig. 2 and in several other figures indicates a vertical slot in a tooth, having in its

bottom a platinum plate D, the object of which plate is to enable the tooth to be soldered to a mouth-plate, the platinum serving to receive or draw in the metallic solder employed to form what is called the "backing" of the tooth. Such backing will consist, as shown at E in Fig. 1, of a thin vertical plate of metal filling the slot in each tooth, and standing in the slot at about right angles with the edge of the plate where the tooth is set. This backing forms a very strong smooth fastening for a tooth, because the strain upon teeth in use is generally in the direction of a line extending from the lingual to the labial side of the teeth. There is very little strain in the direction of the row of teeth—that is to say, in the direction of their proximal sides, where they are self-supporting. Besides this, such a backing presents no exposed edges for the accumulation of matter, which becomes foul and offensive. Again, it is of very small extent upon the surface of the lingual sides of the teeth, and hence the natural contour of the teeth can be preserved so that a natural feeling to the tongue of the wearer will be secured.

F indicates a tube, which may be formed from a slitted platinum blank, such as shown in Fig. 14, and molded into the tooth, as indicated in Figs. 6, 7, 8, 9, 10, 11, and 13. This blank may have its four corners *a a a a* rolled up upon a mandrel to form two tubular ends F F, and a flat piece *b b* remaining to form the platinum bottom to the slot. A platinum wire P, loosely filling the tubular ends F F, may be placed into position and removed after the tooth has been baked or bent, as shown in Fig. 16, to make a stronger attachment for rubber-work. When the tube passes to the proximal side of the tooth, as shown in Figs. 6 and 7, the tooth, after being mounted upon a natural root by the ordinary gold band, may be made to carry another artificial crown, as shown by *x* in Fig. 13. The tube does not necessarily cross the slot, but should be left open at *y*, Fig. 9, so as to allow the solder to pass from the slot into the ends F F of the tube in case solder is used to attach the tooth, and to allow the rubber to go into the tubes in case that material is used, and also aluminium, celluloid, or any cast-plate material. This form of porcelain tooth, therefore, becomes a universal tooth.

In Figs. 15 and 16, E represents the small platinum wire which may be left in the tube. This wire may be bent out into the slot by passing a small smooth instrument between it and the platinum at the bottom of the slot. This will make a firmer attachment for rubber. This pin, being surrounded by the platinum tubular ends F F, is not baked into the tooth, and if made smaller than the tubular ends F F it may be removed entirely from

the tooth. I prefer, however, to allow the wire to remain, as it serves to carry the solder into the tubular ends and prevents contraction in soldering. By making the vertical slot the widest at the bottom, as shown in Figs. 4 and 5, and using a simple piece of thin platinum at the bottom of the slot, the tooth may be used without any tube or pin crossing the slot. There being no pin or tube crossing the slot, the tooth can be easily molded by drawing the piece forming the slot from the bottom in the direction of the line S T from T to S. I thus form a universal tooth structure, convenient to manufacture, durable in use, and of closer approximation to the qualities of a good natural tooth than has heretofore been produced.

In this application I do not claim a porcelain tooth with a vertical slot in its lingual side with one continuous piece of platinum forming a covering for the bottom of the slot and two cylindrical ends baked into the tooth structure, because I have claimed that subject-matter in another application for United States patent.

What I claim is—

1. A porcelain tooth provided with a vertical slot in its lingual side, and a platinum plate or wire secured to and covering the bottom of the slot only, so as to receive the metallic solder to form the backing, substantially as set forth.
2. A porcelain tooth provided with a vertical slot in its lingual side and a tube crossing the slot, substantially as set forth.
3. A porcelain tooth provided with a vertical slot in its lingual side, a platinum plate in the bottom of the slot, and a tube crossing the slot, substantially as set forth.
4. A porcelain tooth with a vertical slot in its lingual side, a platinum bottom to the slot, and a tube passing entirely through the tooth from the sides of the slot to the proximal sides of tooth, substantially as described.
5. A porcelain tooth with a vertical slot in its lingual side, a platinum bottom to the slot, two tubular ends extending from the sides of the slot into the tooth structure on both sides of the slot, and a loose platinum pin or wire crossing the slot and reaching into the tubular projection on both sides of the slot; substantially as described.
6. A porcelain tooth with a slot in its lingual side, a platinum bottom to the slot, and a platinum pin crossing the slot and baked into the tooth structure on both sides of the slot, substantially as described.

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

JOHN S. CAMPBELL.

Witnesses:

S. G. HOPKINS,
LOUIS G. JULIHN.