

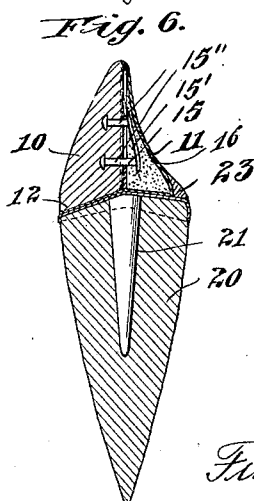
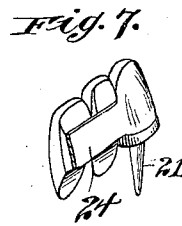
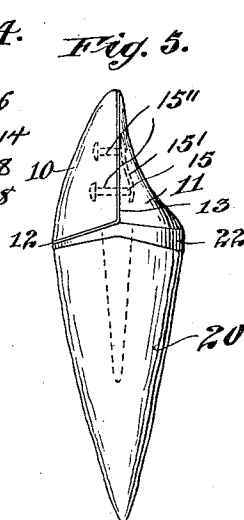
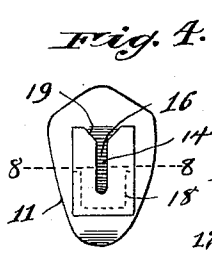
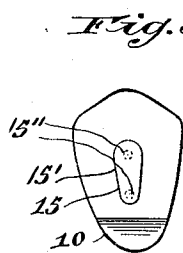
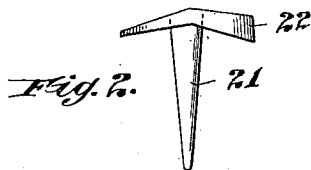
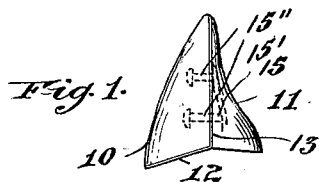
No. 651,388.

Patented June 12, 1900.

F. E. ROACH.
ARTIFICIAL TOOTH.

(Application filed Jan. 27, 1900.)

(No Model.)



Witnesses.

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UNITED STATES PATENT OFFICE.

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ARTIFICIAL TOOTH.

SPECIFICATION forming part of Letters Patent No. 651,388, dated June 12, 1900.

Application filed January 27, 1900. Serial No. 2,990. (No model.)

To all whom it may concern:

Be it known that I, FINIS EWING ROACH, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful
5 Improvements in Artificial Teeth, of which the following is a specification.

This invention relates to artificial teeth, and has for its object to provide a construction whereby such teeth may be readily mounted
10 in position and secured in the mouth, either in the form of partial or complete dentures, without liability of injuring the porcelain or other material of which the body of the tooth is composed during such operation, the construction being of such a nature that any individual tooth if cracked or broken may be
15 readily removed and replaced without affecting the remainder of the denture. The construction is such that the artificial teeth are firmly held in place and will effectually resist the strains of mastication, while the lingual or palatal contour of the denture is the same as that of the natural teeth, thus rendering the building out of this portion with gold or
20 other expensive material unnecessary.

To the ends stated, the invention consists in certain novel features which I will now proceed to describe, and will then particularly point out in the claims.

30 In the accompanying drawings, Figure 1 is a view from one of the approximal sides, showing a crown embodying my invention. Fig. 2 is a similar view of the pin and cap by means of which the structure shown in Fig. 1 may be secured to a root. Fig. 3 is a rear elevation of the porcelain portion of the crown. Fig. 4 is a front elevation of the metallic socket or base therefor. Fig. 5 is an elevation from one of the approximal sides, showing the crown
40 secured to the root. Fig. 6 is a central vertical sectional view through the structure shown in Fig. 5. Fig. 7 is a detail perspective view of a portion of a bridge-denture embodying my invention. Fig. 8 is a transverse sectional view of the socket-piece, taken on line 8 8 of Fig. 4.

As shown in said drawings, the crown consists of two parts—a body portion 10, of porcelain or the like, and a metallic socket-piece
50 or base 11, to which said porcelain body is secured. This base or socket is struck up from a sheet of thin metal and is hollow in form,

having at its lower end a flange or projection 12, which forms a base upon which the porcelain body 10 may rest.

13 indicates a diaphragm, which may be formed in one piece with or soldered to the inner hollow face of the base or socket 11 and which is provided with a slot 14, extending from one end of said diaphragm toward the base of the socket-piece.

The peculiar formation of that part of the metallic base forming the side walls of the slot 14 constitutes one of the essential and most important features of the present invention, the construction being such as to provide a yielding spring-tension engagement with the projection 15, carried by the porcelain body, as will hereinafter appear. To this end said base-plate is provided upon its inner or face side with a cavity 16, adapted to receive a headed projection 15, carried by the porcelain body, and over said cavity is arranged to lie a plate 17, within which is formed the slot 14, hereinbefore mentioned. In the preferred construction illustrated said plate is suitably formed to fit within the cavity 16 at its margins in such manner that its outer surface will be approximately flush with the inner face of the base-plate, as indicated most clearly in sectional Fig. 8, and in order to afford the spring action before mentioned it is soldered to or made rigid with the base-plate throughout a portion only of its length, such soldered portion being indicated by the dotted lines at 18 in Fig. 4—that is to say, the slot 14 extends inwardly from one end of said plate and terminates at a point near the opposite end thereof, and this latter end is soldered rigidly to the base-plate at its end margin and some distance along each of its lateral margins, while the divided end of the plate is left free or unattached and capable of yielding slightly under pressure, it being understood that said plate will be made of suitable spring metal—as, for example, clasp sheet-gold or the like. In order to facilitate the entrance of the projection into engagement with the slot, the entrance end of the latter is enlarged or made flaring, as indicated at 19. The projection 15, which is adapted to engage said slot, consists in the present instance of an elongated relatively-thin or flat head portion 15', provided with two shanks

or pins 15", having their ends seated within the porcelain body, the lower or entrance end of said elongated head being deflected outwardly away from the face of the porcelain body, so as to facilitate the entrance of the head within the slot of the base-plate and at the same time to bring the upper portion thereof into spring-pressed engagement with the spring-plate when fully entered within the latter. With this construction it will be obvious that those portions of the base-plate which rest in contact with the porcelain will be drawn against the latter with a constant spring-pressure, which will insure a rigid uniting of the parts or, in other words, a firm seating of the porcelain upon the base, which in practice will have been secured to the cap of the tooth before the porcelain finally is applied.

It will of course be obvious that it is not essential that the projection carried by the porcelain body be provided with the double shank as described; but I prefer this construction, for the reason that the ends of these shanks may be rigidly secured within the porcelain body by baking them therein and the divided or double shank is less liable to weaken the porcelain than would be the case were a single shank of sufficient rigidity employed.

In practice the hollow body of the socket-piece or base 11 will be filled with a suitable filling—such as gutta-percha, chloro-percha, or cement—the former being preferred, as I have found by experience that the porcelain is less liable to be broken by accidental blows when seated upon a comparatively-yielding backing or base, such as the gutta-percha forms, while at the same time the peculiar lock between the base-plate and the porcelain formed by my improved construction holds the porcelain sufficiently rigid with the base for purposes of mastication and forms in conjunction with the filling a reliable hermetically-sealed joint.

The tooth as thus constructed may be mounted in various ways, the base or socket-piece 11 serving in each instance as a base for the porcelain body and as a means for securing the same in position in the mouth.

I have shown in Figs. 1 to 6, inclusive, a construction in which the tooth or crown is mounted upon a root 20, which is prepared in the usual manner by excavating the nerve-canal and inserting therein a metallic pin 21, which serves to anchor and secure to the root a cap 22, carried by its upper end. The base or socket-piece 11 is secured to this cap by soldering or otherwise, and, if necessary, the lingual contour of the tooth may be completed by building out with solder or other material, as indicated at 23 in Fig. 6 of the drawings. It will, however, be seldom necessary to thus build out above the cap, as the hollow body of the base or socket-piece 11 may be struck up into such shape as to so closely approximate the natural lingual con-

tour of the tooth as to render such building up unnecessary.

I have shown in Fig. 7 of the drawings another mode of mounting a tooth embodying my invention, in which the tooth, constructed substantially as before described, is secured to a bridge-piece 24 by soldering the rear face of the socket-piece 11 to said bridge-piece, this latter being anchored to a natural tooth or cap or crown root in the usual manner in the construction of such dentures.

It will be noted that the artificial tooth described may be secured without exposing the porcelain to the action of heating, and therefore without rendering it liable to be damaged, since the base or socket-piece may be first properly secured in position upon the cap and the porcelain body thereafter secured thereto in the manner hereinbefore described. It will also be observed that in case of injury to the porcelain body the latter may be removed and replaced by a perfect substitute without disconnecting the base or socket-piece from its support in the mouth.

The provision of the base-flange 12, made of relatively-thin sheet metal which is capable of being burnished or otherwise formed up to exactly conform to the lower or base end of the porcelain body, is of special importance when combined with a socket-piece to which the said porcelain body may be detachably applied, as will be apparent from the following description of the method usually followed in applying the denture. After the cap-piece has been finally seated upon the root or crown the socket-piece is placed upon the cap and the base-flange thereof bent and adjusted until it approximately fits and rests closely over the entire area of that part of the cap upon which it is designed to rest. The socket-piece is then removed and the base end of the porcelain body ground to the required angle to approximately fit the base-flange when locked to the socket-piece. The two parts are now locked together and the said pliable base-flange burnished up against the base end of the porcelain body until the fit between the two is absolute. The socket-piece and porcelain are now separated, the surface of the cap provided with a suitable coat of seating-wax, and the socket-piece applied thereto and tacked lightly in position by means of a relatively-hard solder, the point of attachment being preferably at the end of the base-flange remote from the main body of the socket-piece. The porcelain body is now applied to the socket-piece and the tooth as a whole adjusted exactly to position, if it require further adjustment, the wax seating permitting such further slight adjustment as may be required, after which the porcelain body is again detached and the socket-piece soldered firmly to the cap in its final position of adjustment and the porcelain body thereafter applied in the manner hereinbefore described. It is to be noted that the entire process of fitting and applying the den-

ture is accomplished without the aid of investment and not only in an extremely simple and convenient manner, but at the same time in such a way as to insure certainty of accurate results. Obviously by following the above-described method the fit between the lower end of the porcelain body and the base-flange is perfect, while the subsequent soldering insures a perfect filling of whatever interspace may exist between the under surface of the base-plate and the cap-plate, so that the seating of the porcelain upon the crown is one of almost perfect solidity and the liability of the porcelain being broken by blows reduced to a minimum.

By reason of the construction herein shown, in which the flange 12 extends beneath the base of the porcelain body, the thrust or strain of mastication is received upon said base-plate, thereby relieving the connecting-pins and cement from excessive strain.

While I have herein shown what I deem to be a preferred embodiment of my invention, yet it will be obvious that the details of the invention may be modified to some extent without departing from the spirit thereof, and I do not, therefore, wish to be limited to these precise details, except as made the subject of specific claims.

I claim as my invention—

1. An artificial tooth comprising two members, one a metallic socket-piece comprising a hollow body having a flange at its base and provided in its face with a slot formed through a yielding spring portion, and a porcelain body adapted to rest upon said flange at its base and provided with a projection constructed to engage the slot of the socket-piece

and to hold the porcelain body in spring-pressed engagement with the metallic socket when the projection is fully engaged with the slot.

2. An artificial tooth comprising a metallic socket-piece having a hollow body, the lingual contour of which substantially conforms to that of the natural tooth, a spring-metal plate secured to the inner face of said socket-piece throughout a portion only of its area so as to leave the unsecured portion free to yield relatively to the socket-piece, a slot formed in said yielding portion of the spring-plate, a base-flange formed integrally with the socket-piece a porcelain crown provided with a base constructed to rest upon the flange of the socket-piece and provided with a projection having a head or terminal enlargement constructed to engage the slotted plate to hold the porcelain crown in spring-pressed engagement with the socket-piece, and a filling within the hollow portion of the socket-piece, substantially as described.

3. In an artificial tooth, the combination of a metallic socket-piece comprising a hollow body provided in its face with a slot and having at its base a metallic extension-flange forming a connecting-surface for connecting the tooth to a metallic root-cap, a porcelain body adapted to rest upon said flange at its base and provided with a projection constructed to engage the slot of the socket-piece and a metallic cap-piece adapted to be secured to the root, substantially as described.

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