

(No Model.)

E. T. STARR.
ARTIFICIAL TOOTH CROWN.

No. 342,271.

Patented May 18, 1886.

FIG. 1.

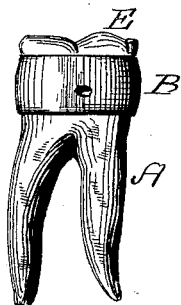


FIG. 2.

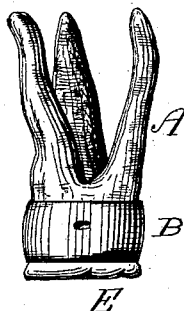


FIG. 3.

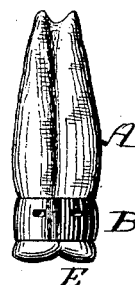


FIG. 4.



FIG. 5.

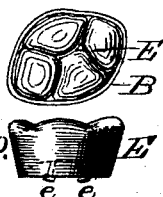


FIG. 6.

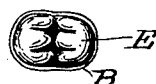


FIG. 10.

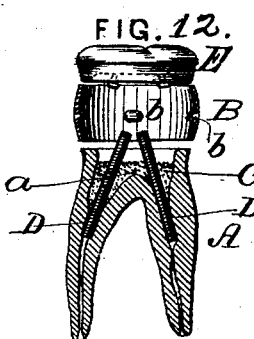
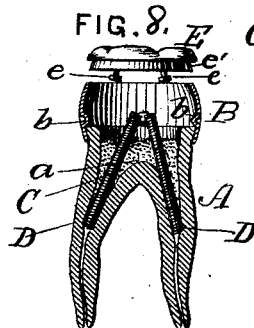
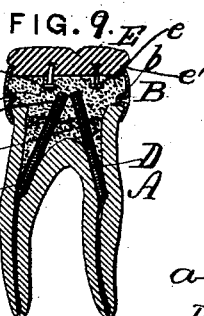
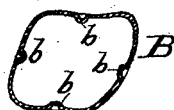


FIG. 13.



WITNESSES:

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INVENTOR:

Eli T. Starr,
by his attys
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UNITED STATES PATENT OFFICE.

ELI T. STARR, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE S. S. WHITE DENTAL MANUFACTURING COMPANY, OF SAME PLACE.

ARTIFICIAL TOOTH-CROWN.

SPECIFICATION forming part of Letters Patent No. 342,271, dated May 18, 1886.

Application filed January 5, 1886. Serial No. 187,730. (No model.)

To all whom it may concern:

Be it known that I, ELI T. STARR, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Artificial Tooth-Crowns, of which the following is a specification.

My invention relates to artificial tooth-crowns applied to natural-tooth roots remaining in the mouth, in order to replace the natural crowns which have been lost or destroyed.

Many attempts have been made to provide a suitable method of replacing lost or denuded tooth-crowns, and with varying success. Some of the plans introduced are very desirable for some teeth, and all the methods introduced, as far as I am aware, are more or less advantageous. It is still a desideratum, however, to have a method of replacing the lost or removed crowns of the jaw-teeth, and by that expression I mean teeth beginning with the bicuspid and running back to and including all the molars, superior and inferior.

My invention is not adapted to the replacement of the crowns of cuspids and incisor teeth, where the masticating-surface or cutting-edge terminates in a comparatively sharp point or edge. There must be, to apply my invention, a neck which presents a thick or substantially round or equivalent shaped body in cross-section, and which also presents such a thick cross-section at the crown or masticating-surface of the tooth. I make use of a metal band surrounding the neck of the root and extending outwardly therefrom, and fitted at its outer end to receive the broad side or end of a cap, substantially, of porcelain or equivalent hard wearing-surface. I make use of the metal band to encircle the neck of the tooth, and extend it sufficiently far to raise the porcelain or equivalent crown-cap when applied to the position the crowning or masticating face of the natural crown occupied.

In order to make use of the crown-cap with the metal band, in contradistinction to the use of a tooth-crown with such a band, which tooth-crown includes not only the grinding or masticating surface, but the body and neck of the crown also, I employ a body of packing or filling material to fill the greater portion of the metal band, and merely cap the whole by

a porcelain cusp-cap, in order to provide a grinding and masticating surface which will stand the wear and abrasion of the opposing or occluding teeth.

It has heretofore been the custom in a large degree to provide the metal band with a top or masticating or grinding or cusp surface of the same metal as the body of the band, usually gold; but it has been found that a grinding or masticating surface of this kind will not stand the wear caused by the opposing teeth.

I have sufficiently indicated the general nature of my present improvements, and will now proceed to describe them more particularly by aid of the accompanying drawings, first premising that the several improvements claimed by me herein are specifically recited in the summary at the close of this specification.

In said drawings, Figure 1 is a view in elevation of an inferior molar tooth with my improved cap-crown applied thereto. Fig. 2 is a view of a superior molar, and Fig. 3 a similar view of a bicuspid tooth, having my improved cap-crown applied thereto. Figs. 4, 5, and 6 are views, respectively, of the face or masticating ends of the crowns shown in Figs. 1, 2, and 3. Fig. 7 is a sectional view of one form of my improved crown-cap. Fig. 8 is a sectional view through a tooth root and band fitted for the application of such a cap to complete the artificial crown, and Fig. 9 is a section through such a root and crown completed. Fig. 10 is a view of another form of my improved crown-cap. Fig. 11 is a section therethrough, and Fig. 12 is a view of the root, band, and such a crown-cap ready to be fitted together. Fig. 13 is a horizontal section through the metal band as shaped for a molar root and crown.

In applying my improvements the natural crown is first completely denuded or cut away, as usual, and the root excavated as usual, and the neck or end of the root A is then fitted with a metal band, B, usually of gold, but may be, of course, of any suitable metal or material. This band is preferably contoured, curved, swelled, or rounded in vertical cross-section, as clearly shown in Figs. 8, 9, and 12 of the drawings, and has teats or projections b formed therein and projecting inwardly, to limit the

endwise movement of the band upon the root in fitting the parts together. The outer end of the band projects beyond the end of the root, and forms a chamber continuous with the chamber *a*, formed in the end of the root in excavating it for the reception of the fastening material *C* and the pins or screws *D D*, (one or more,) which are to aid in securing the artificial crown upon the root in well-known ways. The cement or filling material *C*, usually a quick-setting cement, such as oxychloride of zinc, or amalgam, or some equivalent material, several kinds of which are in common use among dentists, is packed into the chamber of the root and band in a plastic state, and when it sets or hardens it secures the parts together. It will be seen that the chamber formed by the band beyond the end of the root is quite an extensive one, and it is filled with the cement or filling material *C* very nearly to the outer end of the band. While the plastic filling is still soft I apply one of my improved crown-caps, *E*, which may be of porcelain or other suitable material, and is provided with preferably headed pins *e e* (one or more) on its rear end or side, which projects into the metal band and faces the filling material in the root. The pins being embedded in the filling material, securely retain the crown-cap in place when the cement sets or hardens. Said cap *E* is a mere thin cap provided with cusps on its face corresponding to those of the crown it replaces, and is provided in order to present a hard wearing or cusp surface to the opposing or occluding teeth. When the cement or amalgam hardens, the cap, as has been said, is securely locked to the root; and in addition to or in place of the locking pin or pins *e* the crown-cap may be recessed or undercut, or have retaining-shoulders formed upon it to be engaged by the cement or plastic filling.

In the form of cusp crown-cap shown in Figs. 7, 8, and 9 I have shown a circumferential groove or shoulder, *e'*, around the edge of the cap, in which the upper end of the metal band *B* may be brazed or fitted in any suitable manner when the cap is applied to the structure. This shoulder sustains the cap when pressure is applied, as will be obvious, by bearing on the outer edge of the metal band in addition to the bearing its broad inner face has upon the body of filling material *C*.

In order to provide a cusp crown-cap according to my improvements which will enable the cap to be set at an angle to the metal band, which is sometimes necessary, (that is to say, it is sometimes necessary, owing to the particular formation or direction of the root, which may be out of line or otherwise irregular, to apply the cap not with its end inserted the same distance into the band all around its edge, but at one side more than another, so as to enable the cap to fit exactly the occluding or opposing tooth, the crown or masticating-face of which may also be out of

line or irregularly shaped,) I construct my improved crown-cap with inwardly-tapering sides or with inclined periphery, as clearly shown in Figs. 10, 11, and 12, whereby, owing to this taper, one side of the cap may be readily inserted farther into the outer end of the metal band or tube than the other, to enable accurate fitting to be accomplished, while still retaining tight joints all around the end of the band. The cap in this latter construction is a comparatively thicker body than the shouldered cap first described, and clearly shown in Figs. 7, 8, and 9, and in order to lessen the extent of projection of the retaining pin or pins *e* from such a cap I form a recess in the end or rear side of the cap, from which the pin or pins project, and which thus enables the cement or amalgam to encircle the retaining pin or pins without too great projection of said pin or pins beyond the end or inner surface of the cap.

My improved cusp-cap obviously may be made in other forms necessary for use under particular circumstances; but any further modifications thereof need not be either shown or described herein to indicate the scope of the invention.

I claim as my invention—

1. A metal band for use in setting or applying artificial tooth-crowns, having an inwardly-projecting punched-up teat or series of teats thereon, substantially as described, whereby a portion of the metal band is punched up and utilized to limit the movement of said band upon the end of the root when fitted thereto without weakening said band.

2. A straight-edged metal band for use in setting or applying artificial tooth-crowns, made concavo-convex or swelled at its center and contracted at its edges, substantially as described.

3. An artificial tooth-crown cap having an outer surface corresponding to the grinding or masticating surface of the natural crown it is to aid in replacing, a thin body, and an inner face or end fitted with a retaining pin or pins, substantially as described.

4. An artificial tooth-crown cap having a tapered or inclined periphery or edge, substantially as described.

5. An artificial tooth-crown cap having the tapered or inclined periphery, with a recess in the inner end or surface of said cap, substantially as described.

6. An artificial tooth-crown cap having a tapered or inclined periphery or edge, a recess or chamber in the end or rear face thereof, and a retaining pin or pins projecting from said recess, substantially as described.

7. An artificial tooth-crown structure consisting of a straight-edged metal band surrounding the end of the natural root, and having a chamber therein above or beyond said root end, a separate thin porcelain or equivalent cap fitting the entire outer end of said band, and having a grinding or masticating

surface corresponding to the natural crown it
is to replace, and a cement or filling material
in said band-chamber supporting the lower
side of said cap which rests thereon hori-
5 zontally beyond said root end, substantially
as described, whereby a metal masticating-
surface is gotten rid of and that surface
rendered more durable and capable of ready

fitting and of replacement without removing
the metal band from the tooth-root. 10

In testimony whereof I have hereunto sub-
scribed my name.

ELI T. STARR.

Witnesses:

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