E. M. FREDERICKS.

ARTIFICIAL TOOTH CROWN AND SECURING MEANS THEREFOR.

APPLICATION FILED JAN. 20, 1908.

900,363. Patented Oct. 6, 1908.

Fig. 1.

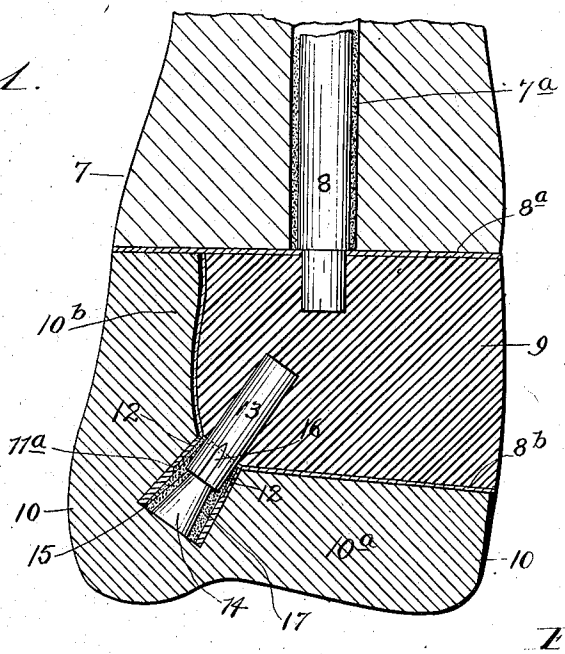


Fig. 2.

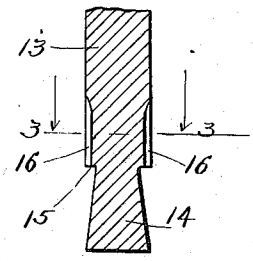


Fig. 4.

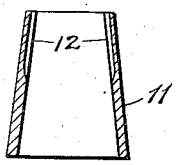


Fig. 5.

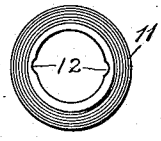


Fig. 6.

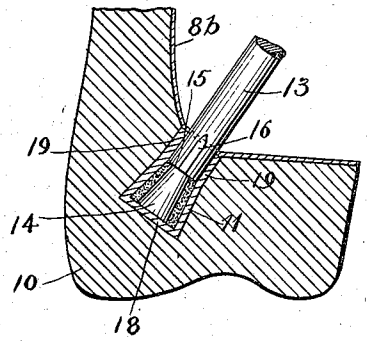
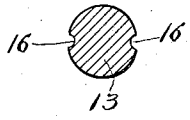


Fig. 3.



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UNITED STATES PATENT OFFICE.

ENOCH M. FREDERICKS, OF CHICAGO, ILLINOIS.

ARTIFICIAL TOOTH-CROWN AND SECURING MEANS THEREFOR.

No. 900,363. Specification of Letters Patent. Patented Oct. 6, 1908.

Application filed January 20, 1908. Serial No. 411,634.

To all whom it may concern:

Be it known that I, ENOCH M. FREDERICKS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Artificial Tooth-Crowns and Securing Means Therefor, of which the following is a specification.

This invention relates to improvements in artificial tooth-crowns and means for securing the same, and it consists in certain peculiarities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

One of the objects of the invention is to provide an artificial tooth-crown, more especially of the molar or bicuspid type, which shall be of such construction or shape that it may be readily prepared to accurately fit the backing and solder-base, and in some instances the exposed end of a natural root, with a minimum of grinding or cutting away of its parts.

Another object is to provide simple and efficient means for securing the crown firmly in place on the backing and solder-base, and in some cases for securing the crown directly and firmly to the root, and in either case in such a manner that in the event of breakage of the crown it will be unnecessary to remove the crown - post in order to place a new crown thereon.

A further object is to provide means whereby the soldering necessary in securing the crown and parts together may be accomplished without injury to or discoloration of the crown.

Other objects and advantages of the invention will be disclosed in the subjoined description and explanation.

In order to enable others skilled in the art to which my invention pertains, to make and use the same, I will now proceed to describe it, referring to the accompanying drawing, in which the views are greatly exaggerated, and in which—

Figure 1 is a sectional view of a tooth-crown provided with fastening means arranged and constructed according to one form of my invention, showing it secured to the backing and solder-base and the latter to a portion of the natural root of a tooth; Fig. 2 is a longitudinal sectional view of a portion of the crown-post or pin; Fig. 3 is a cross-sectional view thereof; Fig. 4 is a longitudinal sectional view of the metallic shell or lining for the cavity of the tooth-crown, and of the form shown in Fig. 1; Fig. 5 is a detached plan view thereof; and Fig. 6 is a sectional view of a tooth-crown with the backing and fastening means therefor, showing a modification in the construction of the latter.

Like numerals of reference, refer to corresponding parts throughout the different views of the drawing.

The reference numeral 7 designates a portion of the root of a natural tooth, in the cavity of which is secured by means of cement 7^a, or otherwise, a post 8, which I will term the solder-post, and is used in conjunction with gold backing 8^a secured on the exposed end of the root to secure the solder-base 9 to the root. As shown in Fig. 1 of the drawing, the solder-post 8 projects through the backing 8^a and into the solder-base 9, and thus firmly secures said parts together, as well as to the root.

The numeral 10 designates, as a whole, the artificial crown, which may be made of any suitable shape and size in accordance with the position in which it is to be placed, and is preferably formed of porcelain, but may be made of other suitable material. When made of the molar or bicuspid type, the crown portion 10^a has extending therefrom a shank or flange 10^b, which, in cross-section, is of very much less size or area than the crown portion 10^a, so that in fitting the crown to the solder-base, or when desired, to the root, it will be necessary to cut away or grind off the shank or flange only to the desired point, thus saving much time and labor.

Molded in the usual manner, or any preferred way, in the crown 10 is a shell 11 which is preferably made of platinum, but may be of any other suitable refractory metal. As shown, this shell is truncated conical in shape, and has each of its ends open, and when in place in the cavity of the tooth forms a lining for the walls thereof. The upper portion of the shell 11 is provided on its inner surface with one or more longitudinally extending grooves 12, which, when only two of such grooves are employed, are preferably located diametrically opposite each other, as shown in Figs. 1, 4 and 5 of the drawing.

Located within the shell 11 is one end of the crown-securing-post 13, the opposite end or

portion of which is adapted to be inserted and secured in any desired manner in the solder-base. A portion of that part of the post 13 located within the shell 11 is formed with a tapered part 14, which has its larger portion at its free end to rest on or to lie in close proximity to the base of the cavity 11^a in the crown. To form this tapered portion 14 the post 13 is reduced, thus forming an annular shoulder 15 at the smaller end of the tapered part 14, which shoulder, as shown in Fig. 1, is located some distance from the front end of the shell 11 and within the same. The base or free end of the tapered part 14 is preferably of the same size as that of the post 13 at the outer end of the shell 11, that is to say, said base, as well as the post, is of a size sufficient to pass through the smaller end of the shell 11, yet so that the body portion of the post, when in position within the shell, will contact with its smaller end, thereby forming a bearing or support at such point. The post 13 is provided with one or more grooves 16 which extend longitudinally from the shoulder 15 to a point outwardly from the smaller end of the shell, as will be readily understood by reference to Figs. 1 and 6 of the drawing, and said grooves, as well as the grooves 12 in the interior of the smaller portion of the shell 11, are for the purpose of permitting air to pass out when the post is inserted in the shell, and also for the purpose of permitting the cement 17 to enter said grooves, and thereby form locks or means for more securely holding the post in position.

Instead of forming the shell 11 with a complete taper from its base or larger end to its smaller end as shown in Fig. 1 of the drawing, and instead of leaving its base or larger end open, I may form it as shown in Fig. 6, in which the base or larger end is provided with abottom 18 from which its walls taper to a suitable point near its smaller end, but preferably to about the shoulder 15 on the post 13, from whence they are arranged in parallelism as at 19, thus forming a tubular portion and providing a greater bearing area for that portion of the post which lies in contact therewith when the post is in position in the shell. In this modified construction the grooves 12 are shown as being omitted, but it will be understood that they may be employed, if desired, and that the grooves 16 in the tube may or may not be used either in the modified construction or in the construction shown in Fig. 1 of the drawing.

While I have shown the shell in Figs. 1 and 4 provided with the grooves 12 and will sometimes employ one or more of them, yet I do not desire to be limited to their use, as they also may be omitted.

In using my improved tooth-crown and means for securing the same, the post or pin 13 is secured in a suitable backing 8^b in any well known manner so that the tapered portion of the post will be exposed and adapted to fit in the shell in the cavity 11^a of the crown. After the crown has been sufficiently ground and made to properly fit the root covering or solder-base and to receive the outer portion of the post 13, which has been secured in the backing 8^b in such a manner that the base or free end of the tapered part 14 will rest against or in close proximity to the base of the cavity in the crown, the crown is removed, then the backing 8^b carrying the post 13 is soldered to the solder-base or root covering, when a quantity of cement is placed in said cavity, and the crown is then placed on the backing 8^b, in which operation the tapered portion of the post will enter the shell 11, thus causing the cement to surround the tapered portion of the post, as well as a part of the untapered portion thereof, where it will become hardened or set, and will firmly hold the crown in position on the post. In the act of placing the crown on its post, it is apparent that the grooves 12 in the shell and the grooves 16 in the post, when both are used or when either are used, will permit the air and surplus cement to escape from the cavity of the shell and thus allow the post to be properly fitted therein. These grooves will also receive a portion of the cement, and after it becomes hardened will serve to prevent the crown turning on the post, and otherwise, more securely hold it in position. As the smaller end of the shell fits snugly around the untapered portion of the post, as shown in Fig. 1, it is apparent that it will provide a bearing therefor at said point, and when the construction shown in Fig. 6 is employed, that the area of said bearing will be increased by reason of the parallel portion of the walls of the shell.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters-Patent, is—

1. As an article of manufacture, an artificial tooth-crown having a post-receiving tapered cavity therein and a tapered metallic shell located in said cavity and having on the inner surface of its smaller end one or more longitudinally extending grooves.

2. As an article of manufacture, an artificial tooth-crown having a tapered metallic shell molded therein and presenting its contracted portion outwardly, the walls of said shell tapering from its base to a point near its outer end and then extended in parallelism to form an enlarged bearing area for a securing-post.

3. The combination with a tooth-crown having a post-receiving tapered cavity, of a tapered metallic shell located in said cavity against the walls thereof and having on the inner surface of its smaller end one or more

longitudinally extending grooves, a securing-post located at one of its ends in the shell and having a portion within the shell tapered from its free end towards the contracted end of the shell.

4. The combination with a tooth-crown having a post-receiving tapered cavity, of a tapered metallic shell located in said cavity against the walls thereof and having on the inner surface of its smaller end one or more longitudinally extending grooves, a securing-post located at one of its ends in the shell and having a portion within the shell tapered from its free end towards the contracted end of the shell, the post also having at the smaller end of the tapered part thereof an annular shoulder and one or more grooves extending longitudinally and outwardly from said shoulder.

5. The combination with a tooth-crown having a post-receiving-tapered-cavity, of a tapered metallic shell located in said cavity against the walls thereof and provided on the inner surface of its smaller end with one or more longitudinally extending grooves, a securing-post located at one of its ends in the shell.

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