Dec. 2, 1924. 1,517,500

E. M. FREDERICKS

ARTIFICIAL CROWN FOR TEETH AND SECURING MEANS THEREFOR

Filed Jan. 5, 1924

Fig. 1

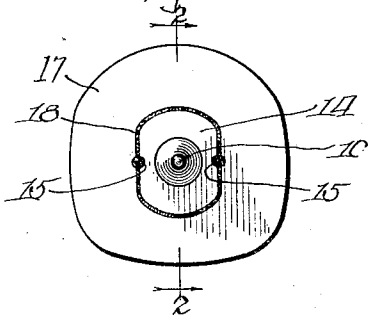


Fig. 2.

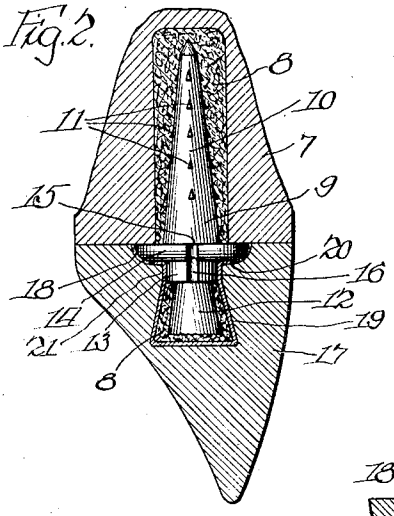


Fig. 3.

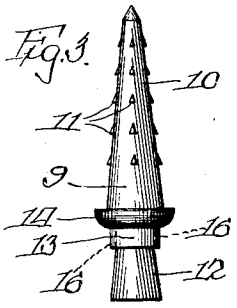


Fig. 4.

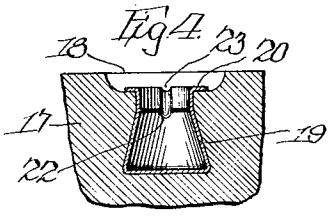


Fig. 5.

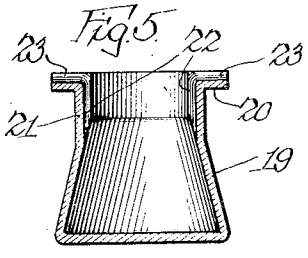
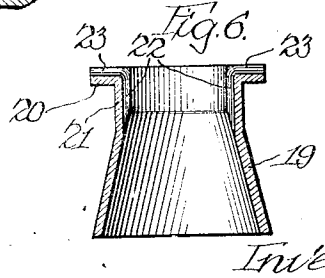


Fig. 6.



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UNITED STATES PATENT OFFICE.

ENOCH M. FREDERICKS, OF CHICAGO, ILLINOIS.

ARTIFICIAL CROWN FOR TEETH AND SECURING MEANS THEREFOR.

Application filed January 5, 1924. Serial No. 684,518.

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 Crowns for Teeth and Securing Means Therefor, of which the following is a specification.

My present invention has relation to improvements in artificial crowns for teeth and in the means for securing the same, of a type somewhat similar to that disclosed in Letters Patent of the United States bearing Numbers 900,363, and 1,418,070, issued to me on October 6, 1908, and on May 30, 1922, respectively.

The present invention has for its principal object to greatly improve the construction and efficiency of tooth crowns and the securing means therefor made according to my aforesaid Letters Patent, as well as over all other tooth crowns and securing means therefor, whereby the breakage of the crowns after being mounted will be reduced to a minimum; turning of the crowns on their supporting posts during mastication will be prevented; facility and security in mounting the crowns increased, and the amount of labor and time expended in fitting the crowns to or mounting them upon the natural roots of the teeth will be reduced.

Other objects and advantages of the invention will become apparent from the following description and explanation, which will be more readily understood when read in conjunction with the accompanying drawing, in which embodiments of which the invention is susceptible is illustrated, it being understood that changes and alterations therein may be resorted to without departing from the spirit of the invention, so long as they fall within the scope of the appended claims forming a part hereof.

In the drawing, the views are greatly exaggerated.

Fig. 1 is a plan view of a tooth crown equipped with fastening means arranged and constructed according to my present invention.

Fig. 2 is a vertical sectional view taken on line 2—2 of Fig. 1 looking in the direction indicated by the arrows showing the crown secured to a natural tooth root.

Fig. 3 is a detached view in side elevation of a crown supporting post employed as part of the securing means of my present invention.

Fig. 4 is a fragmental sectional view of a part of the crown equipped with one form of a metallic shell or lining for the cavity of said crown.

Fig. 5 is a detached longitudinal sectional view of said metallic shell or lining, and

Fig. 6 is a similar view of a modified form of the shell or lining.

Corresponding numerals of reference refer to like parts throughout the different views of the drawing.

Referring now more particularly to Fig. 2 the reference numeral 7 designates a portion of the root of a natural tooth in a bore or cavity of which is secured by means of cement 8 or otherwise a supporting post for the crown, designated as a whole by the numeral 9 which may be made with an upwardly tapered shank 10 provided with spurs or projections 11 to engage the cement in the cavity of the root. This post may be made of any suitable size and material, and as is clearly shown in Fig. 3 of the drawing, has at its lower end an upwardly tapered portion 12 which terminates at the lower end of a cylindrical part 13 of the post. Just above the cylindrical part 13 of the post, the latter is provided with an annular flange or shoulder 14 which preferably has its surface adjacent the shank portion 10 of the post flat or substantially so while the opposite or lower surface of the flange or shoulder 14 is preferably rounded as is clearly shown in Figs. 2 and 3 of the drawing. The shoulder or flange 14 is provided with one or more grooves or recesses 15 which communicate at their lower ends with one or more longitudinally disposed grooves or recesses 16 with which the cylindrical portion 13 of the post is provided. As shown in the drawing, the shoulder 14 is provided with a pair of diametrically disposed grooves 15 while the cylindrical portions 13 of the post is provided with a pair of diametrically disposed grooves 16 registering with the grooves of the shoulder, but it will be understood that I do not desire to limit myself to the above mentioned disposition of the grooves or to the above mentioned number in each of the parts of the post, but may employ one or more registering grooves in the said shoulder and the cylindrical part 13 without a departure from the invention.

By reference to Fig. 1, it will be seen that

the shoulder 14 is elongated for an important purpose to be presently explained.

The artificial tooth crown is designated as a whole by the numeral 17 and may be made of any suitable shape and size in accordance with the position in the mouth in which it is to be placed and is preferably formed of porcelain, but may be made of any other suitable material. The upper surface of the crown is substantially flat as shown in Figs. 1 and 2 and is provided centrally with a cavity 18 of a shape to correspond with the shoulder or flange 14 on the crown supporting post 9 and of sufficient depth to receive said shoulder or flange in such a way that its upper surface will be about flush with the upper surface of the crown or that surface thereof adjacent the root 7 to which it is to be secured. Molded in the usual manner, or in any preferred way in the crown, and centrally with respect to the cavity 18 thereof is a shell 19 which is preferably made of platinum, but may be made of any other suitable refractory material. As shown, this shell is truncated conical in shape, and has its upper end open, and when in place in the cavity therefor in the crown, forms a lining for the walls thereof as well as means for preventing portions or particles of the porcelain or material out of which the crown 17 is made falling into the shell during the process of molding the shell in the crown. This means consists of an outwardly extended annular flange 20 with which the upper end of the cylindrical neck 21 of the shell 19 is provided. This flange is of less width than the width of the cavity or recess 18 from the upper end of the cylindrical neck portion 21 of the shell or lining, that is to say, the outer edge of the flange 20 terminates on the floor of the cavity 18 short of the upwardly extended walls of said cavity as will be readily understood by reference to Figs. 2 and 4 of the drawing. From its cylindrical neck portion 21 the shell 19 is downwardly enlarged and as before stated, has its bottom or inner end closed. The cylindrical neck portion 21 of the shell is of sufficient size to fit closely around the cylindrical portion 13 of the crown supporting post and is provided in its inner surface with a number of grooves 22 corresponding in number and position with the grooves 16 in the cylindrical part 13 of said post.

The grooves 22 are longitudinally disposed in the neck portion 21 of the shell and each communicates at its outer end with a laterally disposed groove 23 formed in the upper or outer surface of the flange 20 as is clearly shown in Figs. 5 and 6 of the drawing. The tapered portion 12 of the crown supporting post 9 is at its largest part of a size to fit snugly in the opening of the neck portion 21 of the shell, but so as to permit said tapered portion to be extended through said opening and positioned within the tapered part of the shell, with its free end spaced a slight distance from the bottom of said shell. When thus positioned, it is manifest that the shoulder 14 will rest on the outer surface of the flange 20 and that the cylindrical portion 13 of the post will be snugly fitted in the opening of the cylindrical neck portion 21 of the shell, which arrangement will so support the post as to prevent the possibility or tendency of any lateral movement of the latter. By providing the shell and its flange with the grooves 22 and 23 and by furnishing the cylindrical portion 13 and shoulder 14 of the post with the grooves 16 and 15 respectively, it is apparent that means will be provided for the escape of air and the excess of cement 8 from the shell when the tapered portion of the post is positioned about as shown in Fig. 2 of the drawing, in which view as well as in Fig. 1, it will be seen and understood that the cavity 18 in which the shoulder or flange 14 is seated, is slightly larger than said shoulder, which arrangement will permit the excess cement from the shell 19 to enter the space between the shoulder and wall of said cavity, there to become set or hardened, thereby assisting in stabilizing the post.

It is further obvious that by the construction of the parts as above described, the metallic crown supporting post 9 will act as a shield or preventive against the breakage of the crown.

While I have shown the shoulder and the recess within which it is seated of slightly elongated shape and prefer to use them of such shape or form, by which arrangement it is obvious that the tooth crown will be prevented turning on the post when uneven pressure is applied thereto in mastication, yet I may make the shoulder 14 and the recess 18 therefor of other shapes than circular and attain the same result of preventing rotation of the crown on its post.

Instead of forming the shell 19 with a bottom as shown in Figs. 2, 4 and 5 of the drawing, I may form it without a bottom as illustrated in Fig. 6, and attain substantially the same results as by the use of the above described construction.

While I have described the parts as if they were employed in a tooth crown to be fitted to the upper jaw and have so illustrated it in the drawing, yet it will be understood that when employed for a crown to be used on the lower jaw, the descriptive terms will be reversed, for example, the shank 10 of the post will constitute its lower portion and the tapered portion 12 its upper portion instead of as shown and above described.

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 cavity therein, said cavity terminating at its outer end in a recess or chamber, and a metallic shell located in said cavity and having at its outer end an external flange overlying and engaging the wall of said recess.

2. As an article of manufacture, an artificial tooth crown having a recess of a shape other than a true circle in its surface adjacent the root or base on which it is mounted, and a tapered metallic shell molded in the crown and presenting its contracted portion outwardly, said contracted portion having an external flange engaging the wall of said recess.

3. The combination with a tooth crown having a post-receiving cavity therein, said cavity terminating at its outer end in an encompassing recess or chamber of a shape other than a true circle, of a metallic shell located in said cavity against the walls thereof and having on the outer surface of its smaller end a flange engaging the wall of said recess and on the inner surface of its smaller end one or more longitudinally extending grooves, and a securing post located at one of its ends in the shell and having a shoulder corresponding in shape to the shape of said recess and located in said recess and on the flange of said shell.

4. The combination with a tooth crown having a post-receiving tapered cavity therein, said cavity terminating at its outer end in an encompassing recess or chamber of a shape other than a true circle, of a tapered metallic shell located in said cavity against the walls thereof and having on the outer surface of its smaller end a flange engaging the wall of said recess and on the inner surface of its smaller end one or more longitudinally extending grooves, said flange having on its outer surface one or more grooves in communication with the first named 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 and provided with a shoulder corresponding in shape to the shape of said recess located in said recess and on the flange of said shell.

5. The combination with a tooth crown having a post-receiving tapered cavity therein, said cavity terminating at its outer end in an encompassing recess or chamber, of a tapered metallic shell located in said cavity against the walls thereof and having on the outer surface of its smaller end a flange engaging the wall of said recess and provided below said flange and adjacent thereto with a cylindrical neck portion, and 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 and provided with a shoulder corresponding in shape to the shape of said recess located in said recess and on the flange of said shell, said post having below and adjacent said shoulder a cylindrical portion.

ENOCH M. FREDERICKS.