No. 680,389. Patented Aug. 13, 1901.

P. B. McCULLOUGH.

DEVICE FOR FORMING MODELS OF CROWNLESS TOOTH ROOTS.

(Application filed Dec. 10, 1900.)

(No Model.)

Fig. 1. Fig. 2. Fig. 3. Fig. 4. Fig. 5.

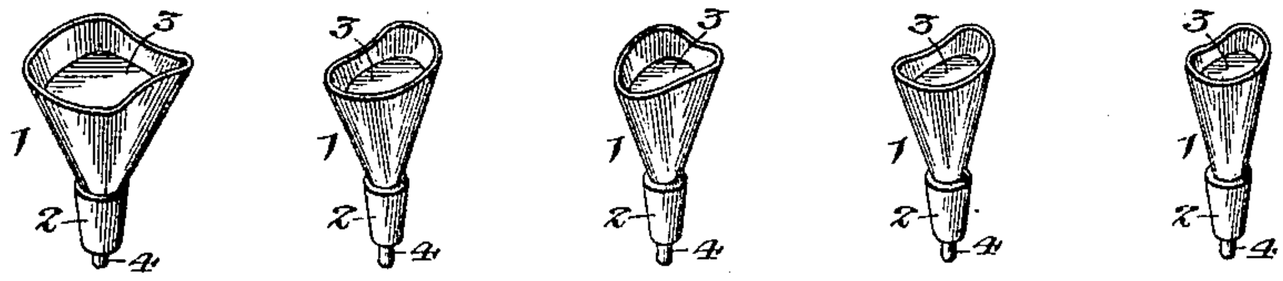


Fig. 7.

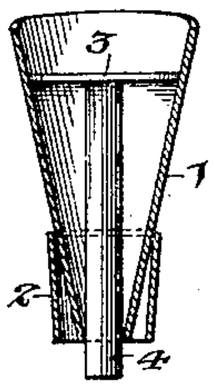


Fig. 8.

Fig. 6.

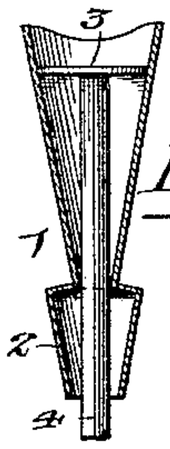


Fig. 9.

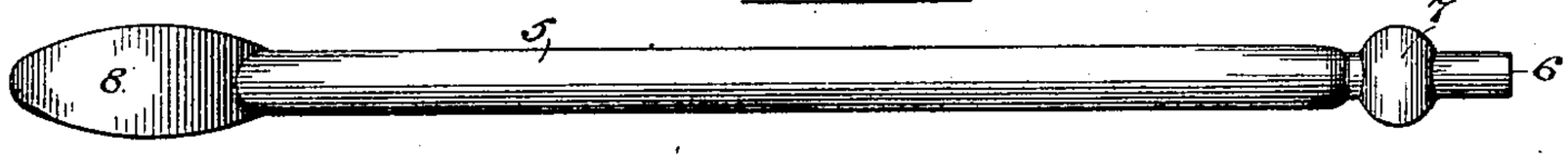
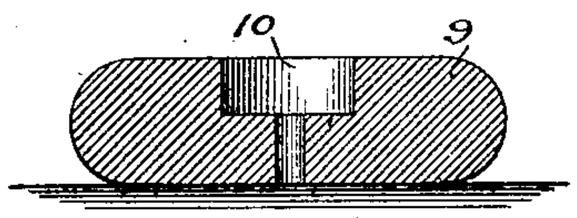


Fig. 10.



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UNITED STATES PATENT OFFICE.

PIERCY B. McCULLOUGH, OF PHILADELPHIA, PENNSYLVANIA.

DEVICE FOR FORMING MODELS OF CROWNLESS TOOTH-ROOTS.

SPECIFICATION forming part of Letters Patent No. 680,389, dated August 13, 1901.

Application filed December 10, 1900. Serial No. 39,395. (No model.)

To all whom it may concern:

Be it known that I, PIERCY B. McCULLOUGH, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented a certain Device for Forming Models of Crownless Tooth-Roots, of which the following is a specification.

The object of my invention is to provide a dentist with means whereby to form first a matrix and then an exact model of the exposed surface and bevel of a natural tooth-root in the mouth after the natural crown has been removed and the root prepared for the reception of the artificial tooth-crown, this model being then available for use in the process of making the artificial crown, thus saving the time of the patient and relieving the pain and discomfort attending the fitting of the crown or parts of the crown to the natural root.

The instruments employed by me for making a model of the prepared surface of any crownless root in the mouth are a number of conoidal metal tubes of two styles and five sizes and a handle for carrying the same. Twenty-three of these tubes comprise the set; but the patterns from which the five sizes are made serve for the entire set, the tubes varying in shape at the spread ends to accord approximately with the outlines of the prepared surfaces of the crownless roots in the mouth. Each tube is provided with an ejector. To facilitate work upon the model, a combined model-support and matrix-plate is provided.

In the accompanying drawings, Figures 1, 2, 3, 4, and 5 are perspective views of the different patterns of conoidal tubes employed for receiving plastic material wherein to form an impression or matrix of the prepared surface of the natural tooth-root. Fig. 6 is an enlarged sectional view of Fig. 5,. Figs. 2, 3, and 4 being of the same construction. Fig. 7 is an enlarged sectional view of Fig. 1. Fig. 8 is a sectional view of the handle or holder for the conoidal tubes, the dotted lines illustrating how said tubes are mounted in the handle. Fig. 9 is a bottom view of said handle or holder, and Fig. 10 is a sectional view of the model-support and matrix-plate.

In the application of an artificial crown to a natural tooth-root it is at present the practice to fit parts of the crown during the process of manufacture to the root in the patient's mouth, thereby causing pain and discomfort and consuming the time both of the patient and of the operator at the chair. It is the purpose of my invention to overcome these objections and in addition thereto to produce with moderate skill a crown having greater accuracy of adjustment and constituting a more perfect imitation of the shape of the natural crown in any given case than has heretofore been possible.

In carrying out my invention I form in the first place an accurate impression or matrix of the prepared surface of a natural tooth-root and from this impression or matrix produce a model, upon which can be made that part of the crown heretofore fitted to the natural root. In order to conveniently take the impression, I use that one of the twenty-three conoidal tubes (the five types of which are shown in Figs. 1 to 5) whose shape and size are best suited to a particular root. Each conoidal tube 1 has affixed to it a similar conoidal end or nozzle 2, intended to fit a corresponding socket in the handle or holder hereinafter referred to, each conoidal tube having a false bottom 3, to which is connected a projecting stem 4, extending beyond the nozzle 2, this false bottom and stem constituting an ejector. The handle or holder (shown in Figs. 8 and 9) consists of a main stem 5, having four conoidal sockets 6 for the reception of the conoidal nozzles 2, one of these sockets being at the reduced end of the stem 5 and parallel therewith, another at right angles to said reduced end, a third at right angles to the stem near the opposite end of the same, and a fourth at right angles to an end portion of the stem which is bent at an angle of about thirty degrees in respect to the longitudinal line of said stem. A curved plate 7 shields the small end of the right-angled socket at the reduced end of the stem of the handle, and another curved plate 8 shields the reduced ends of both sockets at the opposite end of said handle, these plates serving as bite-plates for contact with the teeth of one jaw, whereby a conoidal tube containing plastic composition may be pressed against a tooth-root in the opposite jaw.

In forming an impression of the exposed surface of a prepared root a conoidal tube whose shape is best adapted for that particu-

lar root is applied to that socket of the handle which permits of the most convenient application of the tube to the root. The tube is then filled with phosphate of zinc, cement, or other plastic material and pressed to its place upon the root and, if desired, held in position by contact of the other jaw upon the bite-plate until the plastic mass has become set, whereupon the conoidal tube and handle are removed from the mouth. From the impression or matrix thus formed a cast is made which constitutes an exact model of the prepared tooth-root, and this model can be secured by wax or other confining agent upon the flat surface of the block or support 9, Fig. 10, so as to be in position for the convenient formation thereupon of that portion of the artificial crown which has heretofore been fitted directly upon the root in the mouth.

The block 9 has in one face a depression or matrix 10 for receiving a plastic mass, into which may be pressed a model forming a matrix for the shaping of the masticating surfaces of bicuspid and molar crowns.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. A device for forming an impression of a tooth-root, said device comprising a casing shaped approximately to the outline of said root and adapted for the reception of a mass of plastic material, substantially as specified.

2. A device for forming an impression of a tooth-root, said device comprising a casing shaped approximately to the outline of said root and having a movable false bottom or ejector, substantially as specified.

3. A device for forming an impression of a tooth-root, said device comprising a casing shaped approximately to the outline of said root and having a movable false bottom or ejector with stem projecting beyond the casing, substantially as specified.

4. A device for forming an impression of a tooth-root, said device consisting of a casing shaped to accord approximately to the outline of said root and adapted for the reception of a mass of plastic material, said casing having a nozzle whereby it may be fitted to a socketed handle, substantially as specified.

5. The combination of a casing adapted to receive plastic material to form an impression of a tooth-root, with a handle having sockets at different angles for the support of said casing, substantially as specified.

6. The combination of a casing adapted to receive plastic material for forming an impression of a tooth-root, with a handle having a socket for receiving a portion of said casing, and a bite-plate adjacent to said socket, substantially as specified.

7. The within-described support for the model of a crownless tooth-root, said support comprising a block with a plain face for the reception of said model, and an opposite face with recess for holding a plastic mass for receiving an impression in which to form the masticating surfaces of bicuspid and molar teeth, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PIERCY B. McCULLOUGH.

Witnesses:

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