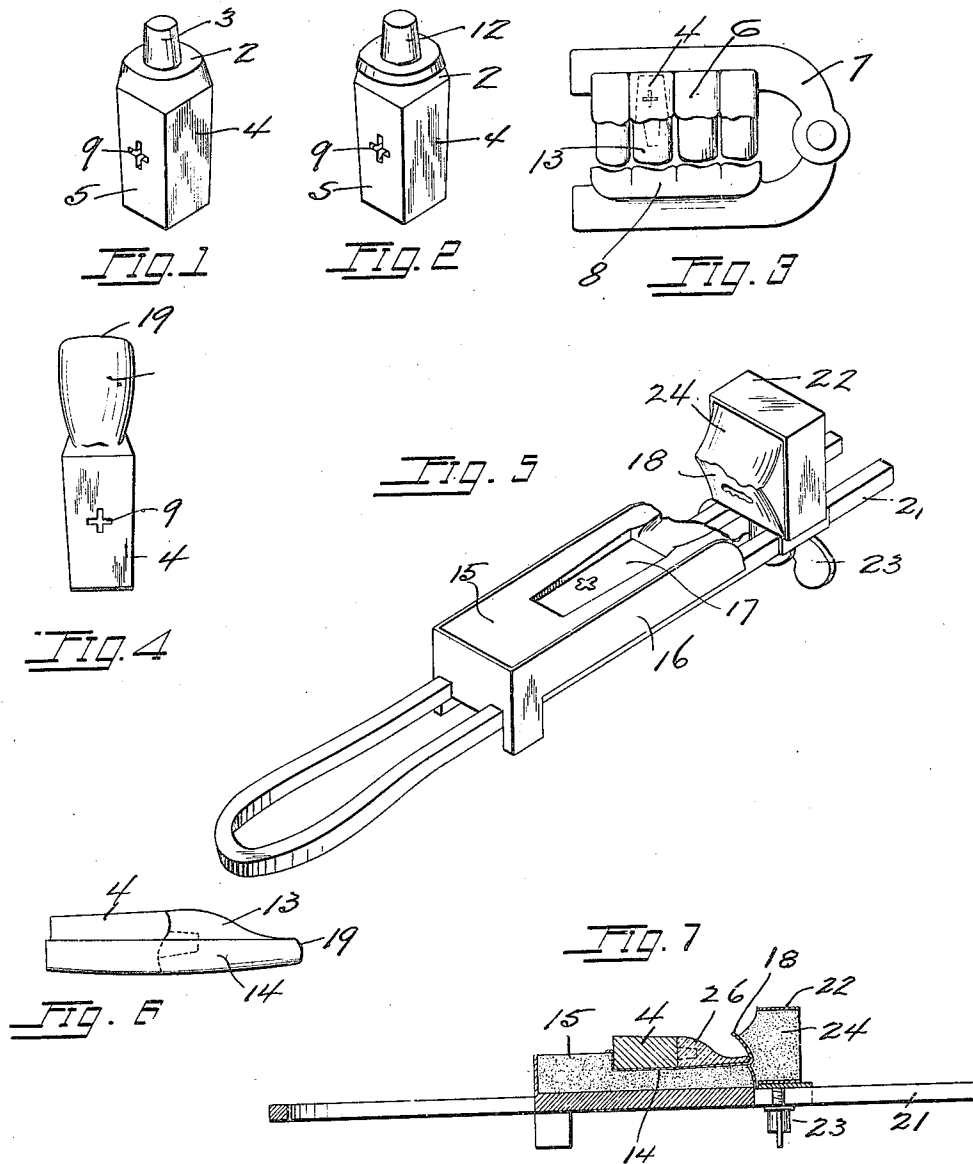


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METHOD OF MANUFACTURING PORCELAIN JACKET CROWNS.
APPLICATION FILED MAR. 22, 1920.

1,372,772.

Patented Mar. 29, 1921.



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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHOTOKU NISHI, a subject of the Emperor of Japan, and a resident of the city and county of San Francisco, and State of California, have invented a certain new and useful Method of Manufacturing Porcelain Jacket-Crowns, of which the following is a specification.

The invention relates to dentistry and particularly to a method of and apparatus for manufacturing porcelain jacket crowns.

An object of the invention is to provide a method of making porcelain jacket crowns which will form a perfect fit with the root stump.

Another object of the invention is to provide a method whereby every dentist may manufacture his own porcelain jacket crowns.

The invention possesses other advantageous features, some of which, with the foregoing, will be set forth at length in the following description where I shall outline in full that form of the invention which I have selected for description and illustration in the accompanying specification and drawings.

Referring to said drawings:

Figure 1 is a perspective view of the cement die of the tooth stump with the flat surfaced root portion.

Fig. 2 is a perspective view of the cement die with the platinum foil matrix thereon.

Fig. 3 is a side view of the articulator with the cement die therein, the stump being covered with the wax crown model.

Fig. 4 is a front view of the cement die with the wax crown thereon.

Fig. 5 is a perspective view of the porcelain mold forming device.

Fig. 6 is a side view of the cement die with the wax crown thereon.

Fig. 7 is a longitudinal section through the mold forming device with the porcelain mold in place.

In accordance with my invention, the tooth root is prepared in the usual manner, with a projecting stump upon which the jacket crown is to be placed. A copper band, filled with a modeling compound, such as inlay wax, is then placed over the root to obtain an impression of the upper contour of the root and the stump. A plaster impression is then taken of the adjacent teeth with the copper band in place and the plaster impression cut out from the

mouth. The copper band, with its filling, is then removed from the mouth and the impression in the band filled with cement to form a cement die 2 of the stump 3 and upper surface of the root. A root portion 4 is also formed of cement, integral with the stump die, and the root portion of the die is preferably rectangular in shape, being provided with flat surfaces, one of which surfaces, 5, is parallel with the labial or buccal side of the tooth. The cement die 2, with the copper band thereon, is then placed in the plaster impression, with the root portion extending upward from the plaster. The plaster impression is then painted with a separating varnish and the cement root portion with vaseline and plaster of Paris is then poured over the plaster impression and cement root portion. When the plaster of Paris has set, it is removed from the plaster impression and forms a plaster model 6 of the adjacent teeth on the jaw. The plaster model is then arranged on articulator 7 in opposition to a wax bite 8. The root portion is then cut from the plaster model and the band and modeling compound removed therefrom and the cement die trimmed at the sides of the root portion to the desired shape. There is thus provided a cement die or duplicate of the stump, with a root portion having flat side faces. On the labial or buccal side 5 of the root portion, I then make an identifying mark, such as the cross 9.

I then arrange a platinum foil matrix 12 on the stump, which extends down over the upper edge of the root portion and burnish down the foil until it forms a smooth, tight joint with the stump and upper root portion. The cement die, with the matrix, is then placed in the plaster model 6 in the articulator, in opposition to the wax bite 8 and with the marked side forward, and the desired shape of the tooth is built up on the matrix with stiff wax, such as inlay wax, using the wax bite and the plaster models of the adjacent teeth, to obtain the proper contour of the wax tooth 13. The wax contouring should be made slightly larger than the desired tooth shape on account of the contraction of the porcelain when baking.

The cement die with the wax model 13 of the jacket crown is then removed from the articulator and a sheet of metal foil 14, such as tin foil, is burnished over the labial or buccal side of the model die. The

model die is then pressed into modeling compound 15 contained in an open end tray 16, the compound being heated so that it is soft. The labial or buccal side of the model die, indicated by the cross, is pressed into the modeling compound to about one-half the depth of the model die, or so that a complete impression 17 of the marked side of the model die is formed. The end of the wax model preferably extends slightly from the open end of the tray. The modeling is then cooled and the model die lifted out and placed back to determine whether it comes out easily and properly. A sheet of tin foil 18 is then burnished over the projecting edge or occlusal surface 19 of the wax model.

Secured to the tray are guideways 21 on which a gate 22 is mounted to slide back and forth, a clamp screw 23 being provided for locking it in place. The gate is filled with modeling compound 24, heated until it is soft, and is then slipped down against the wax model to obtain an impression of the occlusal surface. The modeling is then chilled and the tin foil 18 over the occlusal surface sticks to the modeling in the gate frame. The frame is then slipped backward and the model die is taken from the tray, allowing the tin foil 14 to remain. The tin foil surfaces are then wiped with an essential oil, preferably oil of cloves, to prevent the porcelain from sticking. The platinum matrix is then removed from the cement die, the wax model is melted therefrom and the matrix placed back on the cement die, the stump having been painted with vaseline to seal the joint between the edge of the matrix and the die. The cement die with the matrix is then placed in the tin foil 14 in the tray, with the marked side down, and the gate with its occlusal impression is moved against the tray and locked in position.

Porcelain powder mixed with water is then placed in the tin foil lined mold and condensed by vibration, usually accomplished by drawing a file across the edge of the tray. The wet powder is blotted frequently to remove water and is agitated until it is thoroughly condensed, and the rear face of the porcelain powder casting 26 shaped, as desired. The side edges of the tin foil sheet 14 are used in forming the sides of the casting. Upon sufficient vibration and blotting, the porcelain powder reaches a substantially solid condition, at which time the gate is slid backward, the casting carefully removed from the tray, the tin foil removed and the edges trimmed up. The porcelain casting, or jacket crown, is then lifted from the cement die and is mounted on a suitable base for baking to produce the finished porcelain jacket crown.

Jacket crowns of any desired shape or color may be thus produced by a dentist

and, when placing the porcelain powder in the mold, any desired spotting or coloring of different portions of the crown is readily accomplished. By marking the cement die, a proper fit of the crown is assured, together with a proper positioning of the crown in the mouth.

I claim:

1. The process of making a porcelain jacket crown for a tooth stump, which comprises forming a cement die of the stump, placing a platinum foil matrix over the stump, forming a wax crown over the matrix, forming a metal foil impression of the labial or buccal face of the wax crown, forming a metal foil impression of the occlusal surface of the wax crown, removing the crown from the impressions, removing the wax from the matrix, placing the matrix in position with the impressions, placing wet porcelain powder in the mold formed by the impressions, condensing the porcelain powder and removing the porcelain casting from the mold and baking it.
2. The process of making a porcelain jacket crown for a tooth stump, which comprises making a cement die of the stump with a flat surface root portion, marking the labial or buccal surface of the root portion, placing a platinum foil matrix over the die stump, forming a wax crown on the matrix, forming a metal foil impression of the marked surface of the die and wax crown, removing the wax from the matrix, replacing the root portion and matrix in the impression, filling the space in the impression formerly occupied by the wax crown with porcelain powder, condensing the powder, removing the porcelain casting from the impression and baking the casting.
3. The process of making a porcelain jacket crown for a tooth stump, which comprises making a cement die of the stump with a flat surface root portion, forming on one of the flat surfaces in the plane of the labial or buccal surface of the tooth, a mark, forming a platinum foil matrix on the stump, forming a wax crown on the matrix, forming cooperating metal foil impressions of the marked side of the root portion and crown and of the occlusal surface of the crown, removing the root and crown from the impressions, removing the wax crown from the root, replacing the root in the impression, packing the impression around the matrix with porcelain powder to form a porcelain casting, removing the casting from the impressions and baking the casting.
4. The process of making a porcelain jacket crown for a tooth stump, comprising forming a cement die of the stump with a flat surfaced root portion lying in the plane of the labial or buccal side of the tooth, forming a platinum foil matrix on

the die stump, forming a wax crown model on the matrix, and making impressions of the labial or buccal side and of the occlusal surface of the crown model.

5 5. The process of making a porcelain jacket crown for a tooth stump, comprising making a wax model of the crown, forming an impression of the labial or

buccal side of the model, forming an impression of the occlusal surface of the model, 10 separating the impressions, removing the model, reassembling the impressions and forming a porcelain powder mold therein.

In testimony whereof I have hereunto set my hand.

CHOTOKU NISHI.