No. 666,143. Patented Jan. 15, 1901.

A. P. JOHNSON.

DENTAL BRIDGEWORK.

(Application filed Nov. 10, 1900.)

(No Model.)

Fig. I.

Fig. II.

Fig. III.

Fig. IV.

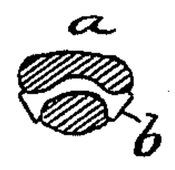


Fig. V.

Fig. VI.

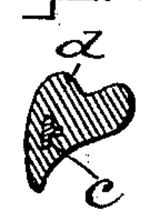


Fig. VII.

Fig. VIII.

Fig. IX.

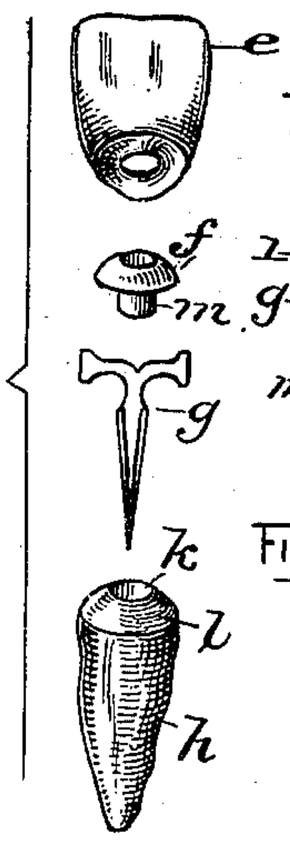


Fig. X.

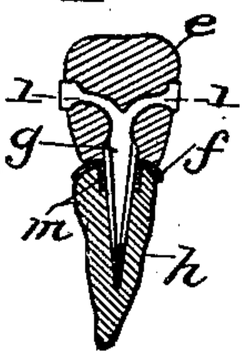


Fig. XI.

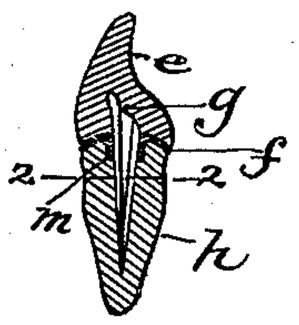


Fig. XII.

Fig. XIII.

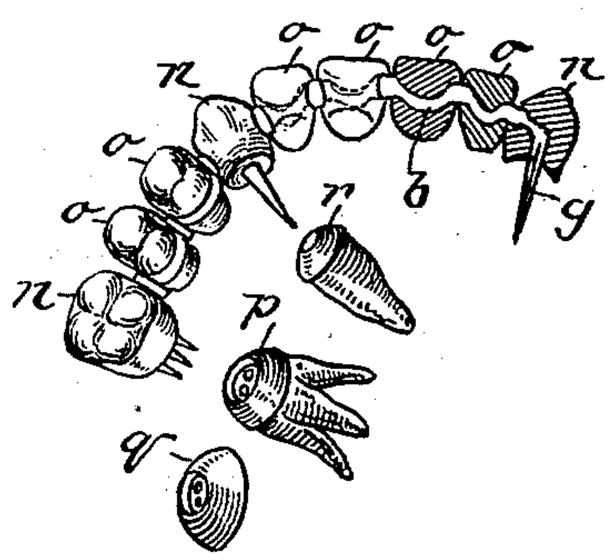


Fig. XIV.

Fig. XV.

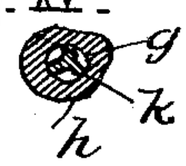


Fig. XVII.

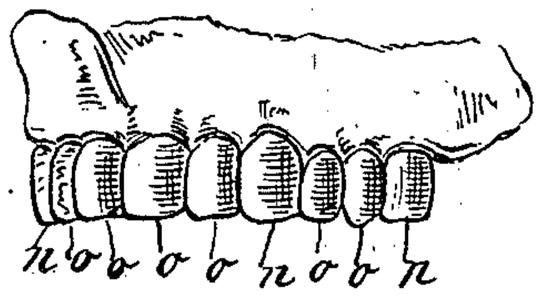


Fig. XVI.

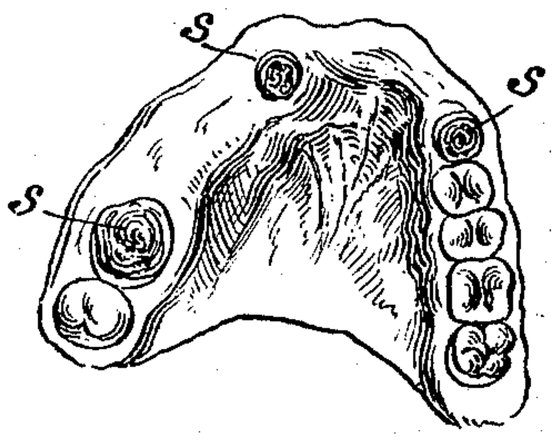
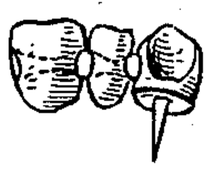


Fig. XVIII.



WITNESSES:

Jos. A. Ryan.

Amos W. Hart

INVENTOR

August P. Johnson

BY Munn & Co.

ATTORNEYS

UNITED STATES PATENT OFFICE.

AUGUST PETER JOHNSON, OF ADA, MINNESOTA.

DENTAL BRIDGEWORK.

SPECIFICATION forming part of Letters Patent No. 666,143, dated January 15, 1901.

Application filed November 10, 1900. Serial No. 36,056. (No model.)

To all whom it may concern:

Be it known that I, AUGUST PETER JOHNSON, residing at Ada, in the county of Norman and State of Minnesota, have made certain new and useful Improvements in Dental Bridgework, of which the following is a specification.

The object of my invention is to provide an improvement in that class of artificial dentures known as "bridgework," whereby a strong natural-looking bridge can be produced from all-porcelain post-crowns and all-porcelain dummy crowns, the former having metallic posts for attachment to the natural-tooth roots, said posts being provided with lateral projections or arms that pass through the body of the crown and project on the side, where its ends are enlarged to form a base for the attachment of my improved dummy crowns constituting the bridge proper. My dummy crowns are provided with a horizontal metallic bar which curves upward and also anteriorly and terminates on the sides of the crown in enlarged heads, a sufficient portion of the metal being exposed on both post and dummy crowns to enable the operator to make a close firm joint when soldering the bridge. The said bars and posts are baked in the crowns at the time of manufacture. I have also provided a small gold or other metallic cap for application to the ends of the tooth-roots. Thus a naturally strong bridge is produced without the use of gold crowns, which are unnatural in appearance, and without crowns made with a porcelain facing to which a metallic bar or backing is attached, and which is objectionable because the metal requires to be covered with gold solder that makes the bridge uncleanly and also weak, since the porcelain facing often parts from the metal backing when in use, with the result that food finds its way between the metal and porcelain. Besides this the porcelain is easily broken.

When the metal bars or backing was covered with porcelain, it required great skill and an expensive apparatus to bake the porcelain properly, and a bridge thus constructed was easily broken and exceedingly difficult to repair, as well as expensive. Porcelain dummy crowns having metal bars baked into them at the time of manufacture have been made heretofore, but have proved a failure, owing to the ill shape of the crowns and the fact that the bars were straight and had the same size throughout. Such bars greatly weakened the porcelain and had to be placed so near the neck of the crowns that the gold solder uniting the crowns was exposed to view when the bridge was in position. In dummy crowns now in general use, which are provided with metallic pins in the back and require to have a platinum or other metallic back attached which is covered with gold solder, the porcelain assumes a dark color and the facing tends to part from the metal and also crack. It likewise requires a great deal of time and labor to produce the bridge, which is expensive and whose artificiality is apparent, especially by gas-light.

All the work required for the construction of one of my dental bridges is the fitting of the necessary porcelain crowns and uniting the abutting ends of the different bars and posts with gold solder, whereby a great saving in time and labor is effected over the old way of making dental bridges.

The invention is as hereinafter set forth and the features of distinguishing novelty are specially indicated.

In the accompanying drawings, Figure 1 is the front view of an incisor porcelain dummy crown. Fig. 2 is a side view of the same. Fig. 3 is a vertical section on line *a b*, Fig. 2. Fig. 4 is a horizontal section of the dummy shown in Fig. 1. Fig. 5 is a side view of a bicuspid porcelain dummy crown. Fig. 6 is vertical section of the same. Fig. 7 is a side view of a molar porcelain dummy crown. Fig. 8 is a vertical section of the same. Fig. 9 includes perspective views of an artificial-tooth or post crown, a metallic cap, the post or anchor for the crown, and a natural-tooth root. Fig. 10 is a longitudinal section showing the aforesaid parts, Fig. 9, connected as in use. Fig. 11 is a longitudinal section at right angles to that shown in Fig. 10. Fig. 12 is a longitudinal section showing a post with but one arm instead of two, as shown in Fig. 10. Fig. 13 is the back view of a finished dental bridge, a part of the same being shown in section. Fig. 14 is a curved cross-section on the line 1 1, Fig. 10. Fig. 15 is a cross-section on line 2 2, Fig. 11. Fig.

16 is the view of the roof of a mouth to which my improved dental bridge is applicable. Fig. 17 is a perspective view showing bridgework arranged as required for such mouth. Fig. 18 is a back view of crowns, showing position of the ends of bars and arms of post abutting as when ready to be united with solder.

In Figs. 1, 2, 3, and 4, *a* indicates the porcelain of the crown, and *b* indicates a metallic bar. This bar is flat in the central portion, with a head or enlargement on both ends, which project slightly from the sides of the crown. The bar is curved toward the anterior surface and toward the neck of the crown. The bar *c* (shown is Figs. 5, 6, 7, and 8) is T-shaped in its central portion and is to be used in molar and bicuspid crowns. These bars *b* and *c* are baked in porcelain dummies in the manufacture of the latter, so that the crowns are to be furnished and sold as articles of manufacture.

In Figs. 9, 10, and 11, *b* indicates a natural-tooth root which is bored longitudinally, the bore *k* therein being tapered and also circular in cross-section and enlarged a little at the base of the tooth-root to accommodate the tube of the cap hereinafter described. The base of the root *l* is ground to a conoidal shape. The cap *f* is concavo-convex in shape and has a round hole in the center, and to the edge of the cap, around said hole, the end of a gold tube is soldered, the same occupying position in and fitting the bore *k* in the tooth-root when the cap *f* is in position on the base of the tooth-root. The outer edge of the cap may be bent at an angle by the dentist, thus forming a flange, if a flange is desired. The porcelain crown *e* has a hollow or conoidal depression at its base, the apex of the cone being pointed toward the cutting edge, and such depression or hollow has the same degree of curvature as the metallic cap.

The metallic post *g* is baked in the porcelain crown at the time of manufacture. That portion of the post that is embedded in the crown is made with two arms when a dummy crown is to be attached on both sides or with but one arm when a dummy crown is to be attached on only one side. The arms of the post *g* are flat, with a head or enlargement on the end. They curve upward and backward and protrude slightly from the side of the crown. That portion of the post which occupies the tooth-root is round, tapered, and grooved on three sides and fits the bore *k* and the tube of the cap.

For molar and bicuspid crowns posts having two or three prongs may be used. These crowns are to be furnished and sold as articles of manufacture.

The metallic cap may be sold separately from the crown.

In Figs. 13 and 14, *n* indicates post-crowns, *o* indicates dummy crowns, *p* is a molar-tooth root prepared for crowning, *q* is the metallic cap to be fitted on the tooth-root, and *r* indicates a cuspid-tooth root prepared for crowning, the metallic cap being fitted and placed in position. In Fig. 16, *s* indicates the roots of decayed teeth, the teeth between them having been extracted.

I will now describe the details of the construction of a piece of dental bridgework constructed according to my invention. In the case of carious teeth like those indicated by *s* in Fig. 17 the remains of the crowns are ground off until the tooth-roots resemble the shape of the roots *p r* in Fig. 13. The metallic cap is then fitted and cemented in position. The post-crowns are then fitted to the tooth-roots to be used as abutments for the bridge, and the necessary dummy crowns are next fitted in position between the post-crowns. The crowns are invested in plaster-of-paris to hold them in the same position they are to occupy in the mouth, and the approximal ends of the different bars and posts are then united with gold or gold solder. The finished piece is then placed in position in the mouth, sufficient cementing material having been placed in the bores of the tooth roots and caps to hold it firmly in position.

What I claim is—

1. An improved platinum or metallic bar for use in the manufacture of porcelain dummy crowns to be used in constructing dental bridgework, the bar being curved upon itself in two directions or anteriorly and toward the neck of the crown, and the ends of the bars being gradually enlarged to a round or oval form, as shown and described.

2. An improved post or anchor for use in the manufacture of pivot-teeth for use in the construction of dental bridgework, the said post being preferably made of platinum, two-thirds of its length being round tapered and grooved on three sides, the other third being bifurcated thus forming two arms which are flat and curved in two directions and terminates in heads or enlargements as shown and described.

3. As an improved article of manufacture, an artificial dummy crown having baked in it a transverse metal bridge-bar provided with enlargements at the ends which project from and are partly embedded in the sides of the crown, as shown and described.

4. As an improved article of manufacture, the artificial pivot-tooth for bridgework, the same consisting of a porcelain crown and the metal post baked therein in the process of manufacture and having the form and arrangement shown, to wit: the body of the post projecting from the crown and the integral base portion, which is embedded and baked into the body of said crown, being curved laterally and terminating in an enlarged head which projects from and is partly embedded in the side of the crown, whereby it is adapted for use as one of the attachments and supports of artificial dummy crowns as specified.

5. As an improved article of manufacture,

a dummy crown having a transverse bridge-bar, which is T-shaped in cross-section and provided with enlargements at its ends, which are partly embedded in and project from the sides of the crown, the bar being baked in the latter in the process of manufacture, substantially as shown and described.

6. A dental bridge composed of two all-porcelain post-crowns having a metal post baked into them and provided with a laterally-curved arm having an enlargement at the side of the crown, and one or more intermediate, all-porcelain, dummy crowns each having a transverse curved metal bar baked into it and provided with enlarged ends, the said posts and bars being soldered together.

AUGUST PETER JOHNSON.

Witnesses:
Mrs. G. E. TAYLOR,
HORACE W. EATON.