

W. H. GATES.  
Artificial Teeth,

No. 164,913.

Patented June 29, 1875.

Fig. 1.

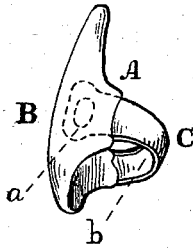


Fig. 2.

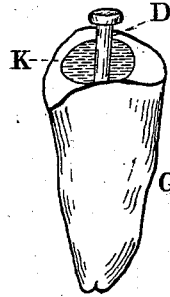


Fig. 3.

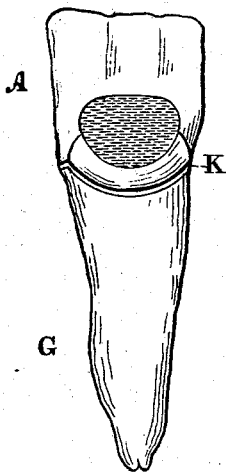


Fig. 4.

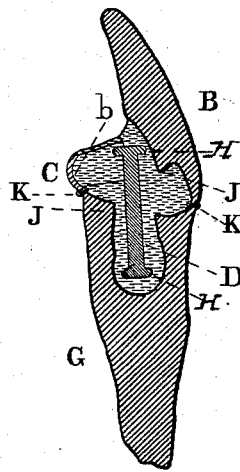
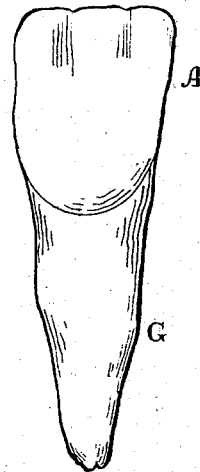


Fig. 5.



Witnesses:

L. F. Brown.

A. P. Grant.

Inventor:

W. H. Gates.

by John A. Dievenour

Atty.

# UNITED STATES PATENT OFFICE.

WILLIAM H. GATES, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN ARTIFICIAL TEETH.

Specification forming part of Letters Patent No. **164,913**, dated June 29, 1875; application filed September 1, 1874.

*To all whom it may concern:*

Be it known that I, WILLIAM H. GATES, of the city and county of Philadelphia and the State of Pennsylvania, have invented a new and useful Improvement in Artificial Teeth; and I do hereby declare the following to be a clear and exact description of the nature thereof, sufficient to enable others skilled in the art to which my invention appertains to fully understand, make, and use the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of a skeleton tooth-crown embodying my invention. Fig. 2 is a perspective view of the root of a natural tooth prepared for the application of the artificial crown. Fig. 3 is a posterior view of a tooth restored. Fig. 4 is a vertical section thereof. Fig. 5 is an anterior view of the tooth restored.

Similar letters of reference indicate corresponding parts in the several figures.

My invention is a vertically-open contour-crown, consisting of the lateral periphery or shell of a crown, inclosing the irregular longitudinal space, having an enlarged diameter at the base of said shell. It further consists in the contour-crown, having the perimeter of its base constructed of porcelain and platinum. It also consists in the platinum formed with a retaining-groove on its inner face. It further consists in a packing-coil compressed between the perimeters of a natural root and artificial crown. It also consists in a vertically-open contour-crown, in combination with cement or its equivalent, completing and conforming said crown to the end of a natural root in attachment thereto, substantially as and for the purpose set forth.

Referring to the drawings, A represents the skeleton crown, which is constructed of the hollow or vertically-open portion B, of porcelain, and a section, C, of an annulus of platinum, whose ends are embedded in the porcelain B. In the ends of said section there are previously formed openings *a a*, (shown in dotted lines, Fig. 1,) which, when the porcelain fuses, are filled by the porcelain flowing thereinto, whereby the connection of the platinum and porcelain is rendered firm and durable. The inner face of the section C is con-

structed longitudinally, so as to form, in vertical section, a groove, *b*, as more fully shown in Fig. 4. D represents a post for connecting the natural root G to the skeleton crown A, and the ends of said post are formed with enlargements H H, which may be in the form of knobs, or disks, or enlargements of the post.

The operation is as follows: The natural root, prepared as for pivoting, should be still further countersunk in the labial part of its exposed end, its pulp-canal enlarged to such depth and form as to receive one end of the connecting-post D, and retain the same securely when embedded by cement or other filling, J. If cement is employed, the bottom of the enlarged cavity should first be lined with gold-foil to prevent the possible softening of the cement by gases from that direction. For this lining a soft foil—about No. 20 in thickness—may be employed, a single piece of which, carried to its place by a piece of spunk touched with moisture, may be readily and perfectly adapted therein, additional pieces of spunk being employed to wedge around the first. Carefully removing the spunk, one end of the connecting-post should now be embedded centrally in this prepared cavity with Guillois' cement, which may fill the cavity entire; or the filling may be completed with gold. The skeleton crown should now be adjusted by wax or spunk, held temporarily in its proper position over the end of the root while a plaster impression is taken, including one or two adjoining teeth on each side. This impression is to be employed as a brace to hold the crown in position while being permanently secured, and upon its removal the crown will remain embedded therein, the wax or spunk being disengaged. This plaster brace should be trimmed of superfluous plaster, uncovering the lingual and labial surfaces and the cutting-edge of the embedded crown to admit of access and light. At a subsequent operation, upon replacing this plaster brace, a cavity is formed by the hollow crown approaching the end of the root; and the connecting-post stands ready therein for attachment. To fill this cavity perfectly completes the crown, and, by embedding the connecting-post, makes the attachment secure.

A convenient and reliable material for the

filling is Guillois' cement; but the cavity must be rendered impervious to moisture. For this purpose I employ gold-foil, taking of an uncut cylinder, of No. 2, 3, or 4 of "style B" of Williams' patent gold-cylinders, sufficient length to coil once around upon the edge or perimeter of the root, as at K, and, coating one surface with liquid gutta-percha, produce adherence by slightly pressing it against the said perimeter, which has previously been thoroughly dried. Upon replacing the plaster brace the gold coil K will be caught between the approaching edges of the skeleton crown and root, and be centrally condensed, making the junction water-tight. The inner border of the gold should now, with a slightly foot-shaped burnisher, be pressed close to the joint, leaving exposed as much as possible of the surface of the end of the root. A thick paste of Guillois' cement now forced carefully into the cavity around the connecting-post with piece of spunk will solidify and secure this artificial crown to the natural root in the most substantial manner; but while this cement is becoming sufficiently set, and before removing the plaster brace, employ part of the few minutes in carefully shaping a shallow cavity in its exposed surface, having a retaining-groove under the adjoining edge of platinum, and fill it temporarily with Hill's stopping. Remove the plaster brace by first cutting away those portions adjacent to the artificial crown, and caution the patient to spare the tooth for a few days, until this cement has attained its extraordinary hardness, when the Hill's stopping should be replaced with gold, and the external border of the gold coil packed closely with a smooth instrument from behind a small shield of rubber dam, upon removal of which the operation is complete.

Besides the anterior, the principle of this invention, a vertically-hollow form may be applied to the posterior teeth; but the rounder forms of bicuspid and molars make them sufficiently strong as hollow crowns in porcelain alone; yet a posterior or an entire base section of the contour of these teeth may be con-

structed of platinum by perforating its lateral contiguous border to be embedded in the porcelain. If constructed of porcelain alone, the diameter of the hollow in the crown will be smaller at some point near the base, for retaining purposes, than toward the crown.

The connecting-post, also, instead of having a single swell at each end for attachment, may consist of a succession of enlarged diameters or disks and their intervening spaces, so that any required length might readily be taken. Again, in order to stay the post while being embedded in the root, it may terminate in a small point, to be forced, when heated, into Hill's stopping or other plastic filling in the pulp-canal beyond the bottom of the enlarged cavity; or, if needed, its terminus may be a screw, to be screwed into the pulp-canal.

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

1. A vertically-open contour-crown consisting of the lateral periphery or shell of a crown inclosing the the irregular longitudinal space, having an enlarged diameter at the base of said shell, substantially as and for the purpose set forth.

2. The contour-crown A, having the perimeter of its base constructed of porcelain and platinum, substantially as and for the purpose set forth.

3. The platinum, formed with a groove on its inner face, substantially as and for the purpose set forth.

4. The packing-coil K, compressed between the perimeters of a natural root and artificial crown, substantially as and for the purpose set forth.

5. A vertically-open contour-crown, in combination with cement or its equivalent, completing and conforming said crown to the end of a natural root in attachment thereto, substantially as and for the purpose set forth.

W. H. GATES.

Witnesses:

JOHN A. WIEDERSHEIM,  
A. P. GRANT.