

(No Model.)

2 Sheets—Sheet 1.

A. S. RICHMOND.  
ARTIFICIAL DENTURE.

No. 277,933.

Patented May 22, 1883.

Figure 1.

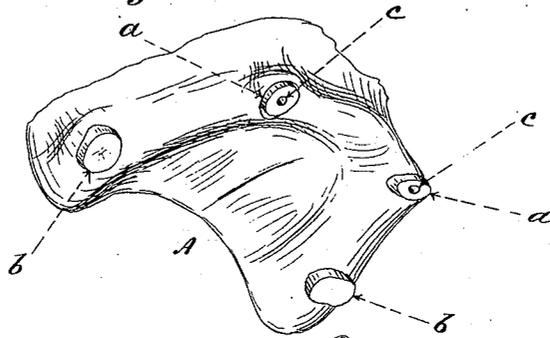


Figure 2.

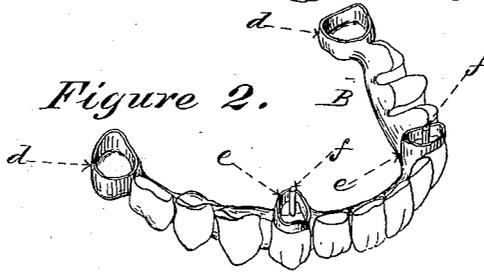
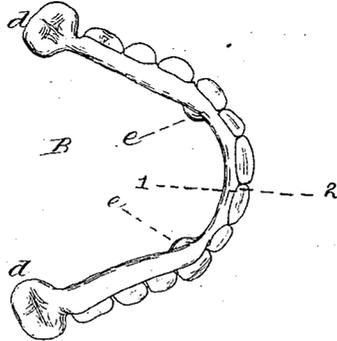


Figure 4.



Figure 3.



Witnesses:  
Geo. H. Evans  
A. Pollock

Inventor:  
Alvan S. Richmond,  
By his attorney  
E. N. DeKor

(No Model.)

2 Sheets—Sheet 2.

A. S. RICHMOND.  
ARTIFICIAL DENTURE.

No. 277,933.

Patented May 22, 1883.

*Figure 6.*



*Figure 5.*



Witnesses:  
Court. G. Cooper,  
H. E. Hansmann.

A. S. Richmond  
Inventor.  
By Charles E. Foster  
Att'y.

# UNITED STATES PATENT OFFICE.

ALVAN S. RICHMOND, OF NEW YORK, N. Y., ASSIGNOR TO LUCIUS TRACY SHEFFIELD, OF SAME PLACE.

## ARTIFICIAL DENTURE.

SPECIFICATION forming part of Letters Patent No. 277,933, dated May 23, 1883.

Application filed August 9, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, ALVAN S. RICHMOND, of the city, county, and State of New York, have invented a new and useful Improvement in Artificial Dentures, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

This invention relates to an improved means of replacing one or more teeth which may have been lost from the mouth, by supporting the artificial tooth-crown upon a bridge, or preferably metallic support, between two other roots.

To replace teeth which may have been destroyed from the mouth, it is usually customary to form a plate or bearing-surface against the gum, by means of which the teeth are supported. By my improvement, however, the denture is supported upon bearings upon the natural teeth or roots, which prevent the displacement of the denture by vertical pressure and without necessary contact with the gum, and is secured immovably.

By my improvement any number of teeth, from one to a full set, can be readily applied to any mouth, provided there be suitable supporting teeth or roots.

In applying my invention, in case one or more of the incisors or canines is to be used to support the bridge, I suitably prepare the same by cutting it off at or near the margin of the gum, leaving a preferably square surface there. The method of preparing this root will form the subject of a separate application. I then prepare a suitable cap or cup to be slipped over said prepared root, which should project beneath the free margin of the gum. This cap should be closed hermetically at the outer end, and when in position should absolutely protect the end of the root and take such a bearing upon the root or tooth as to be immovable under vertical pressure. It may be, and preferably should be, additionally strengthened in its position by a pin projecting upward into a suitably-prepared cavity in the root, and there cemented. I do not ordinarily cut away a bicuspid or molar tooth, but prepare a suitable cap to cover the same. The cap should preferably be in contact with the tooth or crown throughout its entire extent, and especially under the margin of the gum. These caps and the roots being so prepared, I then build up

between the caps a bridge-support, preferably of metal. I prefer to use for my base a strip of suitable alloy. The artificial teeth are applied externally to this support, and soldered thereto by means of platinum pins baked into the porcelain, or otherwise mechanically attached, and especially for the molar and the bicuspid teeth the metal portion should project over the wearing-surfaces, or be arranged so as to constitute the masticating-surface, so that the grinding action may be taken up by the metal instead of on the porcelain. The reason for making this wearing-surface of gold is that if the artificial porcelain teeth are applied so as to receive pressure, and the full force of the jaw is applied to their ends, they might be separated from the supporting-bridge. By the described construction the teeth are so supported that in masticating the force is applied to the metal, and there is no pressure applied to drive the teeth away from their support. The bridges between the cups and the teeth supported thereby are free from contact with the gum, the natural teeth or roots constituting the sole support of the denture. By thus supporting the denture so that its bearing is solely against the teeth or roots I avoid any lateral draft, strains, or wrenching of the latter, and also absolutely prevent any abrasion or wounding of the sensitive gum-surfaces, which are barely in contact, if at all, with any part of the structure, the rigidity of which, between its supports, prevents it from springing or yielding so as to take any other bearing, while the positive bearings at the supports prevent the denture slipping thereon against the gums.

My invention is clearly illustrated in the accompanying drawings, in which Figure 1 represents a view of a prepared jaw to which my invention is to be applied; Fig. 2, a view of the artificial denture ready to be applied to the jaw, showing the methods of attachment; Fig. 3, an under view of the same, showing the relation of the grinding-surfaces to the porcelain teeth; Fig. 4, the method of attaching the cuspid teeth to the root, showing a section of the artificial denture in position. Fig. 5 is a sectional perspective view, looking from the inside of the mouth; and Fig. 6 is an enlarged section on the line 1 2, Fig. 3. These views represent a full set.

In preparing my artificial denture I take a cast of the mouth in the usual way, and then prepare a metallic strip of suitable configuration, to which the artificial teeth or crowns are to be attached. I properly prepare the roots for the reception of the caps or cups, which afford the desired bearings on roots or teeth, of which one should be at either end of each section of the artificial denture. As shown, four have been provided. These having been properly arranged with relation to the bridge or strip of metal upon which the teeth are to be placed, I then place the whole in a suitable investment, and attach the teeth together by means of solder, preferably gold solder, and the appliance will then present the form or configuration shown in Fig. 2. The artificial denture so prepared may then be readily applied to the mouth.

In my drawings, A represents generally the jaw; B, the prepared tooth-crown; *a*, the cuspid roots ready prepared, preferably drilled with the holes C; *b*, the molar roots or teeth, which need not be drilled. *d* and *e* represent the cups ready to be attached to the roots or teeth *b* and *a*. *f* represents the pins which enter the holes *c*. When properly applied this denture will be as firm in the mouth as the natural teeth are, and will of course protect the natural roots or teeth from decay, the bearing-cups only having contact with these roots or teeth, the bridge and teeth being supported away from the gum, as shown in Fig. 5. Partial sets containing a greater or less number of teeth may be readily applied.

It will be observed that the cups or sockets surrounding the roots, as distinguished from bands having no bottom or closed end, form an essential and very important part of my combination, because when bands are used the great force due to the closure of the jaws is liable to force the denture against the gum, while by my invention the cup has a bearing upon a positive face or shoulder and supports the pressure. Without this improvement the bridge is liable to be easily separated from the supporting teeth or roots. Moreover, by my

improvement substantially no cement is required to prevent vertical motion, since the bearing is always upon the roots, and merely enough attachment is required to prevent the withdrawal of the denture from the roots, the cement being used to fill the interstices.

I am aware of the patent to James E. Low, granted on the 15th day of March, 1881, No. 238,940, and do not in this application claim anything therein shown or claimed, intending to make a separate application therefor, my invention being mainly distinguished by the fact that the metallic part of the denture has a positive bearing upon some part of the root or tooth, whereby movement toward the gum is resisted and absolutely prevented, and the teeth or roots are protected from decaying influences of the mouth.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An artificial denture consisting of a metallic bridge, artificial teeth supported thereby upon the outer side thereof, and two or more cups or caps adapted to natural roots or teeth and attached to the bridge, whereby the said teeth or roots are made the sole bearings of the denture, substantially as set forth.

2. An artificial denture which consists of two cups or sockets, adapted to fit over and surround two teeth or roots, connected together by an intermediate bar or support upon which artificial teeth are mounted, which bar constitutes the masticating portion of the denture, for the purpose of preventing the strain upon the artificial teeth, substantially as described.

3. The combination, with fixed natural teeth or roots, of an intermediate bridge supporting artificial teeth, and provided with caps having their bearings upon the ends of such natural teeth and secured thereto by fastening means, substantially as set forth.

ALVAN S. RICHMOND.

Witnesses:

GEO. H. EVANS,  
WM. A. POLLOCK.