(No Model.)

A. L. & B. F. GILMER.

ARTIFICIAL DENTURE.

No. 584,345. Patented June 15, 1897.

Fig. 1.

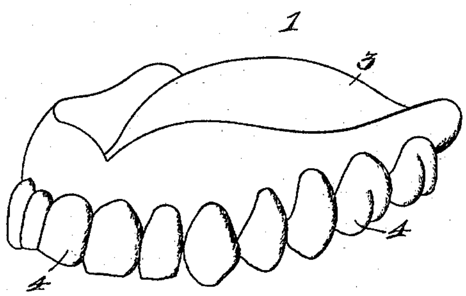


Fig. 2.

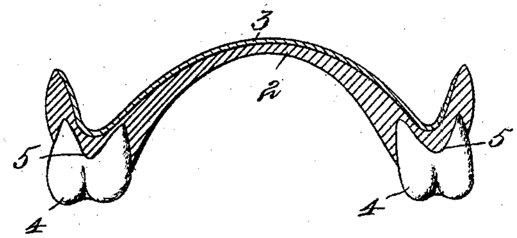


Fig. 3.

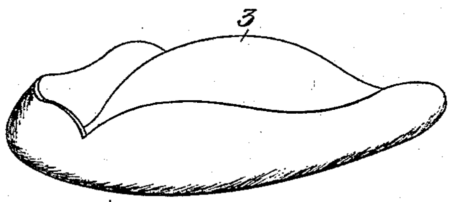


Fig. 4.

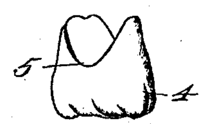


Fig. 5.

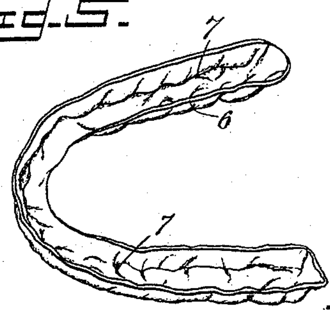


Fig. 6.

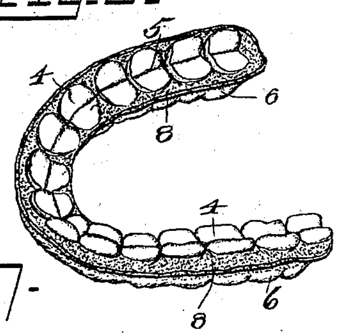
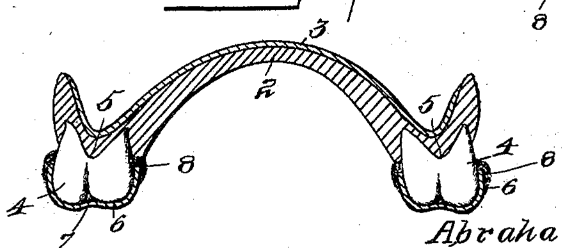


Fig. 7.



Witnesses

W. J. Lavarre.

L. P. Hollingsworth.

Inventors

Abraham L. Gilmer and Benjamin F. Gilmer,

By their Attorneys, C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

ABRAHAM L. GILMER AND BENJAMIN F. GILMER, OF QUINCY, ILLINOIS.

ARTIFICIAL DENTURE.

SPECIFICATION forming part of Letters Patent No. 584,345, dated June 15, 1897.

Application filed August 10, 1896. Serial No. 602,310. (No model.)

To all whom it may concern:

Be it known that we, ABRAHAM L. GILMER and BENJAMIN F. GILMER, citizens of the United States, residing at Quincy, in the county of Adams and State of Illinois, have invented a new and useful Artificial Denture, of which the following is a specification.

This invention relates to artificial dentures, and more particularly to an improved method of manufacturing such dentures and continuous gumwork.

To this end the main and primary object of the improvement contemplated by this invention is to dispense with the cost attendant upon the manufacture of continuous gumwork and to provide an artificial plate which will closely resemble the natural gum and practically defy detection. In the accomplishment of this result the invention is intended in the nature of an improvement upon our former patent, No. 553,523.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a perspective view of a set of artificial teeth constructed in accordance with this invention. Fig. 2 is a transverse sectional view thereof. Fig. 3 is a detail in perspective of the metal backing forming the base or foundation of the denture. Fig. 4 is a detail in perspective of one of the artificial teeth. Fig. 5 is a detail in perspective of the U-shaped retaining-pan for holding the articulation of the teeth during baking. Fig. 6 is a detail in perspective of the retaining-pan, showing the articulated teeth invested therein previous to the porcelain body or plate being packed thereon. Fig. 7 is a view similar to Fig. 2, showing the complete denture ready for baking with the teeth invested in the retaining-pan.

Referring to the accompanying drawings, the numeral 1 designates an artificial denture constructed in accordance with the present invention, said denture essentially comprising a fused porcelain body or plate 2, formed in one continuous solid piece, a platinum plate or backing 3 lining the porcelain body or plate 2 and forming the base or foundation of the denture, and the teeth 4, embedded in the ridge of the porcelain body or plate 2. The plates 2 and 3 and the teeth 4 are designed to be fused together in the manner hereinafter more particularly referred to, and the teeth 4 are each provided with a substantially V-shaped crotch 5, extending inwardly from the neck of the tooth, such construction of teeth enabling the latter to straddle and fit over the alveolar ridge, and, further, by providing the teeth with the crotches 5 an extended surface is obtained for the fusing of the teeth to the porcelain plate or body, whereby the teeth are prevented from being misplaced while undergoing the process of baking.

Having described the general construction of the artificial denture 1, the method or process of manufacturing the same will now be particularly referred to. The first step in the production of the denture is to take an impression of the mouth in the usual manner and construct a mold of plaster-of-paris therefrom, from which mold are formed dies, the same consisting of a die and a counter-die of metal. The platinum plate or backing 3 is now formed by taking a thin sheet of platinum of a proper gage and first forcing the same over the die. A piece of rubber dam is placed across the counter-die, and the thin platinum plate 3 is then shaped into the required form by being swaged between the complementary parts of the dies. After being swaged to the required configuration to correspond with the impression of the mouth the platinum plate is removed from the counter-die, the rubber dam admitting of this removal. The platinum plate is then removed from the die and that portion which is to fit the palatine portion of the mouth and the alveolar ridge is poured full of fireproof investing material, which remains on the said plate 3 until the artificial denture is complete.

After forming and investing the metallic plate or backing 3 of the denture the teeth are ready for articulation in the usual way, the specific construction of the teeth and the objects of such construction being already referred to. The teeth being ready for articulation the platinum or metallic plate 3, invested in fireproof material, as described, is now inserted in the bite and placed on the

articulator, and the artificial teeth 4 are articulated in wax in the usual way, so as to have the same articulation as in the completed denture. When the teeth are properly articulated, an impression of the teeth is taken in molding-sand, and from this impression are formed dies, the same consisting of a die and a counter-die of metal. When the die and counter-die of the configuration and articulation of the teeth are made, a strip of platinum of a suitable gage is cut and bent into substantially horseshoe or U shape to fit over the cusps and cutting edges of the articulated teeth. A piece of rubber dam is then placed across the counter-die and the platinum strip is swaged between the die and counter-die to produce a U-shaped retaining-pan 6, the inner surfaces of which are provided with indentations and ridges 7 to conform to the grinding and cutting edges of the teeth and the articulation thereof, said pan 6 being clearly illustrated in Fig. 5 of the drawings.

When the platinum strip is swaged to cover and conform to the grinding and cutting edges of the teeth, the same will extend about half-way down the coronal portion of the teeth, and the teeth that are articulated in the wax of the articulator will fit accurately in this retaining-pan so swaged. After the formation of the retaining-pan 6 the articulated teeth are made to register therein and are invested in fireproof investing material 8, as clearly illustrated in Fig. 7 of the drawings. At this stage of the process the teeth remain on the articulator, but after the investment sets a piece of wax or molding compound is warmed and placed on the inferior teeth, extending from the molars on the one side to the incisors and molars on the opposite side, and the articulator is then closed. After the wax is cooled the articulator is opened and the wax base-plate thereof is removed, leaving the articulated teeth as they appear in Fig. 7 of the drawings. The porcelain body 2 is now packed in, on, and around the articulated teeth where the wax base-plate of the articulator had previously been, it being of course understood that the porcelain body 2 is made to conform to the platinum or metal plate 3, backing the same and forming the base of the denture. The complete denture is now formed, and the teeth thereof are retained securely in their articulated positions by the retaining-pan 6. The entire denture with the teeth invested in the retaining-pan are now placed in the furnace and the platinum plate, porcelain body or plate 2, and the teeth are fused together to finish the denture. After baking a coat of coloring material to represent gum-tissue is applied to the proper portion of the denture and the same is returned to the furnace and baked to finish the work, thereby producing a substantial and durable set of artificial teeth, the platinum lining or backing 3 of which withstands the intense heat required to bake this kind of work, although an alloy of platinum and iridium may be employed for making the said plate 3.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. The herein-described method of manufacturing artificial dentures which consists in swaging a platinum plate or backing to conform to the required place of use, investing said metal plate or backing, investing an articulated set of artificial teeth in a retaining-pan and removing the articulator to leave the teeth in said pan, packing a porcelain body or plate on the articulated teeth in the retaining-pan and conforming said body or plate with said platinum plate or backing to complete the denture, fusing the body or plate and teeth together with the latter invested in the retaining-pan, and finally removing the retaining-pan and investment from the teeth of the denture, substantially as described.

2. In the art of making continuous gum-work, a retaining-pan, for holding the articulation of the teeth of the denture while being baked, consisting of a substantially U-shaped body having its inner surface swaged to conform to the configuration of the grinding and cutting edges of the teeth and also to the articulation thereof, substantially as set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

ABRAHAM L. GILMER.
BENJAMIN F. GILMER.

Witnesses:
ERNEST M. WOOD,
MARTIN GEISE.