

[54] DENTURE AND METHOD OF MAKING THE SAME

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[22] Filed: Feb. 4, 1974

[21] Appl. No.: 439,095

Related U.S. Application Data

[63] Continuation of Ser. No. 311,782, Dec. 4, 1972, abandoned.

[52] U.S. Cl. 32/2

[51] Int. Cl.²..... A61C 13/00

[58] Field of Search..... 32/2, 5, 1

[56]

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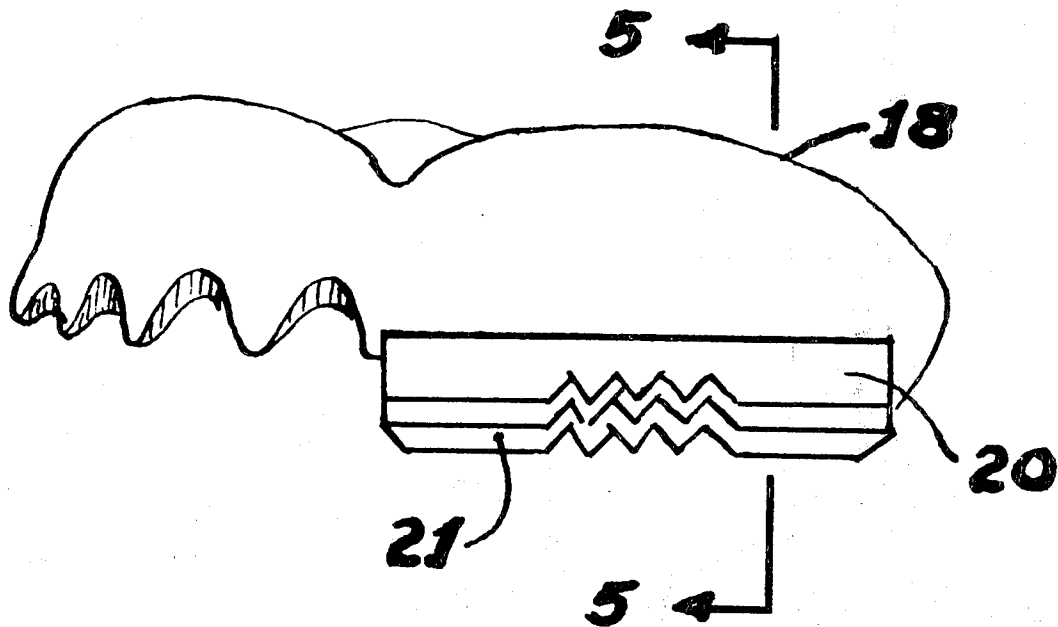
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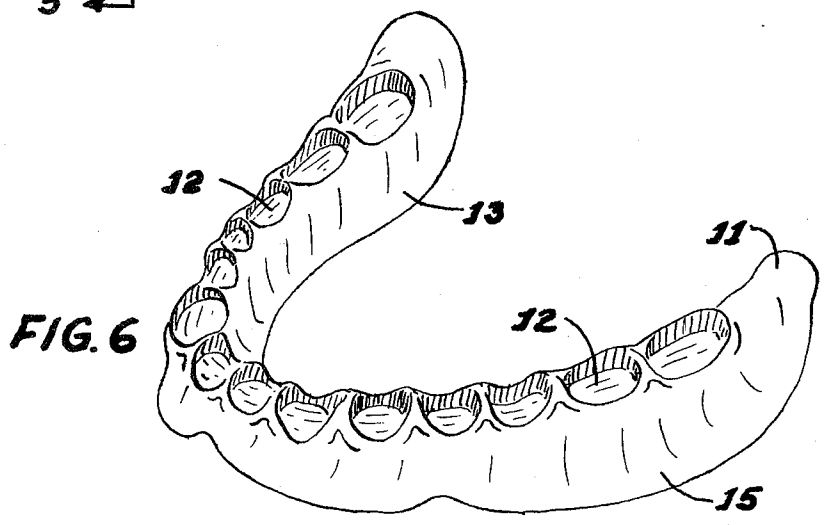
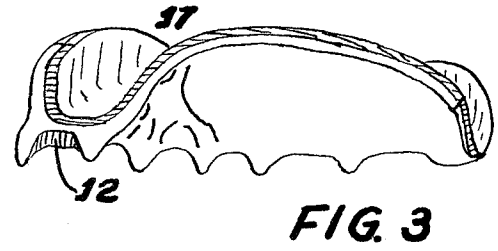
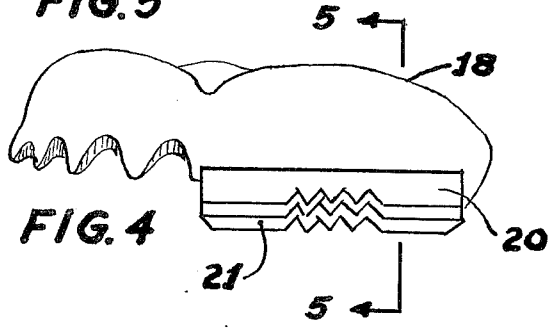
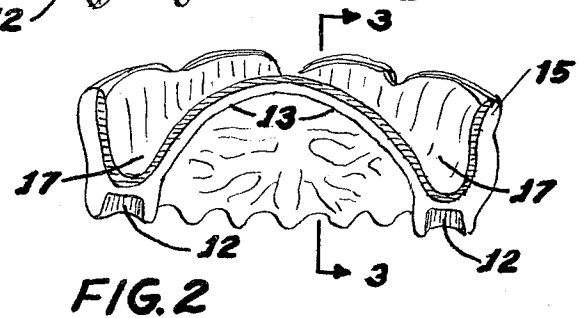
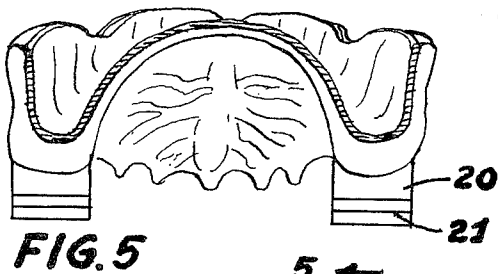
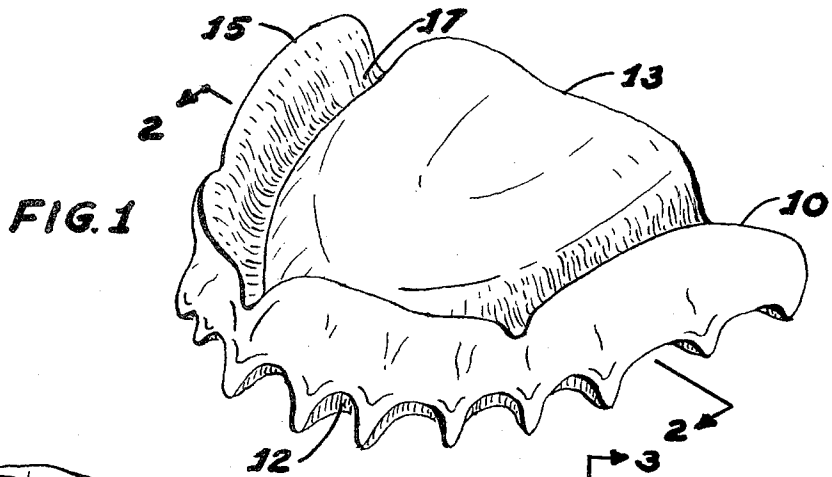
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ABSTRACT

A pre-formed wax pattern of a denture, which in itself, is mass produced by a simple conventional process and a novel process of customizing said wax pattern to a finalized denture for substantially any individual patient in a fast, efficient and effective manner.

7 Claims, 6 Drawing Figures





DENTURE AND METHOD OF MAKING THE SAME

This is a Continuation of application, Ser. No. 311,782 filed on Dec. 4, 1972 now abandoned.

This invention relates to the art of fabricating a denture and the pattern from which said denture is made.

More particularly, this invention relates to a wax pattern of a denture and the process of customizing a denture therefrom in a precision-like manner for substantially any patient requiring such care.

In the past, the construction of dentures was considered a specialized art requiring many long and tedious hours of not only the practitioner's time, but also the time of a highly skilled technician. And, in some cases, the conventional procedure caused discomfort and delay in the finishing and delivery of the finalized product to the patient. In fact, the conventional procedures in the past were found in many cases to require as much as 4 weeks or even more before the patient received the item under discussion for every day use.

In conventional practice, a mold is made of the gums and the areas adjacent thereto. If the site of fabrication be the upper gum area of the oral cavity, then the roof of the mouth would also be included in the mold. In sequence, a cast would be produced from the mold and subsequently a preliminary base for the denture would be produced from such cast and, at this point, teeth would be positioned in proper location on the base and the long and tedious process of adjusting the fit, function and appearance of the denture relative to the patient would then begin. Initially, the dentist would insert the prelim base in the patient's mouth, make many and varied corrections to the item and return the same to the technician for adjustment and processing to a final product. The latter correctional procedure of the dentist and technician could be repeated many times until the denture is precisely fitted to the desired area of the patient's mouth to provide the ability for effective chewing and an efficiency in the function of speech of the patient.

What is needed in the art of dentistry is some manner of producing a denture in a simple and efficient manner, such denture possessing the optimum in appearance and precision for effective use by the average patient in the shortest possible time from the initial visit to the practitioner.

The present invention answers the needs of the art with special emphasis on a simple wax pattern which is mass produced by conventional methods known in the art to conform to the average dimensions occurring most frequently among a mass of people. The latter pattern may be used to produce and finalize a denture having a high degree of precision for effective use by the patient in the least possible time which would be about one visit to the practitioner's office.

Therefore, it is an object of this invention to provide a pre-formed wax pattern for use in the fabrication of a denture.

Another object is to provide a process for use in fabricating a denture from a pre-formed wax pattern in the shortest possible time.

A still further object is to provide a denture having a high degree of precision for effective use to the patient for whom it is provided.

A further object is to produce a denture in the shortest possible time from a pre-form wax pattern, such denture having the desired appearance, precision and

effectiveness in use for the individual patient for whom it was designed.

Other many and varied objects will become more apparent to those skilled in the art from a reading of the following detailed specification taken with the drawings wherein:

FIG. 1 is a view of the preferred embodiment of this invention.

FIG. 2 is a view of the device taken on line 2—2 of FIG. 1.

FIG. 3 is a view of the device taken on line 3—3 of FIG. 2.

FIG. 4 is a view of another embodiment of this invention.

FIG. 5 is a view taken on line 5—5 of FIG. 4.

FIG. 6 is a view of a pattern for use in preparing a lower denture.

Similar numerals relate to similar parts throughout the several views.

Referring to FIG. 1, the device 10 of this invention is a wax pattern of a denture base which may be individually produced on a mass scale by many conventional fabricating procedures in use today. This device 10 is further used in the process under discussion to produce an artificial denture. The device or pattern is a simulation of the attached and unattached gingival tissues appearing in the natural state of an individual when a full complement of anterior and posterior teeth are present. The embodiment 10 of this invention is designed to be custom fit to the upper edentate ridge in the patient's mouth.

Integral to the outer surface of the wax pattern is a plurality of sockets 12 for receipt of artificial teeth to obtain the optimum in appearance, effectiveness in chewing and efficiency in speech before the product is finalized.

FIG. 2 is a cross-sectional view of a pattern again of the upper denture which fits the upper edentate ridge of the patient's mouth. However, in this view, the trough or channel 17 is clearly shown as it is formed by the interior walls 13 and the exterior walls 15 of the device. This channel 17 is designed for receptive engagement to the aforesaid ridge of the patient's mouth.

The device, as shown in FIGS. 1 and 2, is separately produced in mass by conventional procedures to conform to average edentate ridge sizes and shapes. However, each of the devices of equivalent specification would not fit any and all patients. Therefore, a number or series of patterns must be produced wherein each series would have equivalent dimensions. Hence, depending on the size and dimensions of the elements of the patient's mouth, the dentist would initially choose one pattern that would best fit the individual patient under his care. To more precisely fit the pre-formed pattern or device to the individual patient, the channel 17 must conform to the exact outer surface of the upper ridge, therefore, a spacer of moldable material such as wax and compressed tissue paper would be deposited into the channel and the wax pattern would be fitted to the aforesaid ridge and a slight amount of pressure would then be applied against the device forcing the interior of the channel against the exterior surface of the edentate ridge. The wax pattern is then removed and the excess wax or filler is removed and/or the voids are filled with elastic impressionable material such as mercaptan rubber and again the device is fitted to the upper ridge. In this manner, the dentist will produce a

precision-like pattern of the outer surface of the ridge in the surface of the channel 17 and the element will then be customized to the patient.

Note should be taken that the process heretofore described is applicable for the preparation of an upper denture. However, substantially the same process may be used to prepare a lower denture or, in some cases, both dentures may be prepared simultaneously by such process. The exact adaptation described permits stabilization and retention of the wax base in position while stable artificial front teeth are placed to determine the most suitable appearance for the patient. The relationship of the upper and lower jaws are also determined to provide the proper speech, chewing and rest functions. When all these determinations have been made, patterns are submitted to a dental technician for the conversion process of wax base to the final plastic base denture.

FIG. 3 is a cross-sectional view taken on line 3—3 of FIG. 2 showing in greater detail the section of the device defined by the palate and the section of the device defining the channel 17 for reception of the frontal portion of the upper ridge of the patient's mouth.

FIG. 4 shows another embodiment of the device. In such latter view, the four posterior teeth on each side of the pattern are replaced by a substantially rectangular block 20 having stripable longitudinal layers 21 of a material such as plastic whose function it is to provide the proper fit of the denture to the patient by simply stripping off the plastic layers until this function is achieved. The latter procedures may be also accomplished on both the upper and lower pattern simultaneously. This block provides a means for checking the proper bite and the adaptability of the wax base to the patient's jaw and is dimensioned to approximate the teeth which will be substituted in the final denture. This type of pattern may be required in cases where the standard pattern cannot be readily or satisfactorily fitted, or where the dentist is accustomed to this method of obtaining bites for inter-jaw relations and the extent the teeth should protrude into the space formerly occupied by natural teeth. Some laboratory instrumentation currently in use are more readily adaptable to this form of denture base pattern.

Referring now to FIG. 5, it may be more clearly seen that the longitudinal layers 21 form in step-wise fashion the body of the substantially rectangular block 20. It may also be clearly seen that by stripping the longitudinal layers from body of the block 20, one may easily adjust the elevation of the posterior area of the pattern for the upper denture. Also, the same procedure may be utilized on the pattern of the lower denture to adjust the depression of the posterior area thereof or both the upper and lower patterns may be adjusted simultaneously.

The pattern utilized in the fabrication of the aforesaid denture is usually made of wax because of its unique moldable properties. The latter material in the soft state will easily conform to the soft tissue components of the patient's jaw. And, after a relatively minor amount of adjustment with conventional instruments, it will conform in a precision-like manner to the desired form of shape. Therefore, as a result under normal conditions, the pre-formed pattern may be easily utilized in the production of a denture processing the optimum in precision in the shortest possible time for the individual patient under the practitioner's care.

Thus, any individual of a mass of people may be fitted with artificial dentures in the least possible time and the dentures would be individually customized for that particular patient.

In operation: the practitioner examines the mouth of the patient and thus determines roughly the size wax pattern to utilize in the further fabrication of the denture. He then selects the appropriate size, i.e., the pattern that is dimensionally closest to that of the ridge of the patient's mouth. The dentist then commences to fit the pattern to the jaw of the patient by cutting and trimming the excess wax from the rough pattern until a more precise fit is obtained. The channel is then provided with moldable material, such as wax with compressed paper to serve as a spacer, and the unit is inserted into the mouth of the patient in such a manner that the ridge is receptively engaged by the channel. Upon further examination and treatment, the dentist will manipulate the wax pattern and spacer more closely to the ridge. Moldable material such as that heretofore described may be utilized for such function. When the moldable material is removed, a space is created that may be subsequently occupied by a material of the impressionable variety, such as a mercaptan rubber, to exactly reproduce the exterior surface characteristics of the edentate ridge. When the impressionable material sets or cures, the pattern is carefully removed from the mouth and the pattern precisely conforms to that of the individual's jaw. In the final stage, artificial teeth are chosen to satisfy the function and esthetic requirements of the patient. The latter teeth are designed for insertion, with minor adjustment, into the sockets 12 and secured therein with wax similar to the pattern wax with rapidly curing adhesive provided in the pattern 10. After the teeth are inserted, the bite is given a final functional check and the prelim customization is completed. The pattern is converted to the final denture base material by conventional processing procedures by either the dentist or dental auxiliaries. Adjustments of the final denture are made after it is tried in the patient's mouth and subsequently after it has been worn for a period of time.

There are many alternate steps of the procedure which could be utilized within the boundary of this invention. For instance, a bonding agent may be utilized to unite the channel of the wax pattern to a second impressionable type material prior to insertion of the channel over the ridge, if this procedure is more amenable to the practitioner. In other situations, the bonding agent under discussion may be incorporated in the wax pattern during the fabrication process or, as heretofore stated, it may be a separate item placed in the channel just prior to the impression stage.

Also, if desired or required, a deviation from the process described may produce an otherwise acceptable denture. This deviation appears in FIG. 4, wherein the area provided for the four posterior teeth, on each side of the pattern, are replaced by a substantially rectangular block of wax 20. The sockets for the aforesaid teeth are thus replaced, but are subsequently provided in the block as hereinafter described. After the stage where the bite is taken, the aforesaid posterior teeth are selected to match the anterior set of teeth and subsequently the rectangular block is prepared by a technician for the reception of such posterior teeth by providing sockets in the wax pattern.

Furthermore, the pattern shown in FIG. 6 is used to fabricate a lower denture in precisely the same manner heretofore described for the fabrication of the upper denture from an individual pattern which was heretofore produced in a dimensional series by conventional mass production procedures of the forming art such as molding or die and press procedures.

As is evident from the aforesaid description, a quality product possessing the optimum in precision is effectively produced in an efficient manner within the shortest possible time. Thus, a saving of both time and money is possible with no loss of quality in the preferred procedure, and the role of the technician is reduced considerably or eliminated.

What is claimed is:

1. An improved unitary solid base of the mass-produced variety in the form of a rough moldable wax-pattern for use in the preparation of a separate, finalized denture having the exacting dimensions of the mouth of a patient,

said wax-pattern having the following characteristics:

A. a wax body consisting structurally in the form of a rough counterpart of a lower denture,

1. said wax-body having inner and outer peripheral sides forming a semi-annular channel consisting structurally in a rough counterpart of the lower mandible ridge of the mouth of said patient,

a. said channel having an exterior base structurally containing a plurality of sockets adapted for the receipt of artificial teeth, and

b. each of said sockets having a periphery consisting structurally in a rough counterpart of the attached and unattached gingival tissues of the gum of said patient.

2. An improved unitary solid base of the mass-produced variety in the form of a rough moldable wax-pattern for use in the preparation of a separate finalized denture having the exacting dimensions of the mouth of a patient,

said wax-pattern having the following characteristics:

A. a wax-body consisting structurally in a rough counterpart of the palate of the mouth of said patient,

1. said wax-body having inner and outer peripheral

sides forming a peripheral channel consisting structurally in a rough counterpart of the upper edentate ridge of the mouth of said patient,

a. said peripheral channel having an exterior base structurally containing a plurality of sockets adapted for the receipt of artificial anterior and posterior teeth, and

b. each of said sockets having a periphery consisting structurally in a rough counterpart of the attached and unattached gingival tissues of the gums of said patient.

3. In an improved process of fabricating an effective denture from a unitary solid base pattern, the improvement consisting in sequence of:

a. Selecting an appropriate size unitary wax-pattern of a denture for a patient,

said wax-pattern having an arc shaped channel similar to that of denture and also simulating the attached and unattached gingival tissue of a full complement of natural teeth,

b. Fitting said channel to the upper edentate ridge of said patient through the use of impressionable material of a relatively fast setting nature prior to producing a separate denture from said base by conventional casting procedures.

4. In the improved process of claim 3 wherein said unitary wax-pattern is fitted to the lower mandible ridge.

5. In the improved process of claim 4 wherein said fitting of said base pattern also includes cutting and trimming of the simulated gingival tissue.

6. In the improved process of claim 5 wherein said fitting of said base pattern includes substantially molding of the interior of said channel to the edentatic upper ridge to produce a precision counterpart of said ridge by removing excess impressionable material and by filling the voids with said material.

7. In the improved process of claim 6 wherein said fitting includes substantially molding the interior of said channel to the mandible ridge to produce a precision counterpart of said ridge by removing excess impressionable material and by filling the voids with said material.

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