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V. P. HENDRICKS

2,618,062

ARTIFICIAL TEETH

Filed May 2, 1949

FIG. 1.

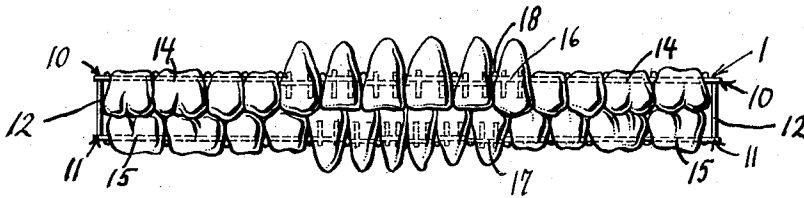


FIG. 3.

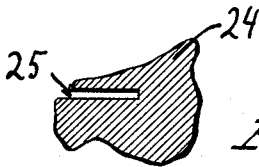
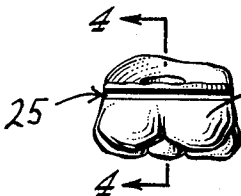


FIG. 2.

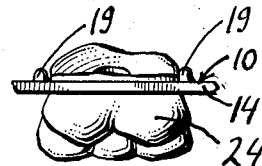


FIG. 5.

FIG. 4.

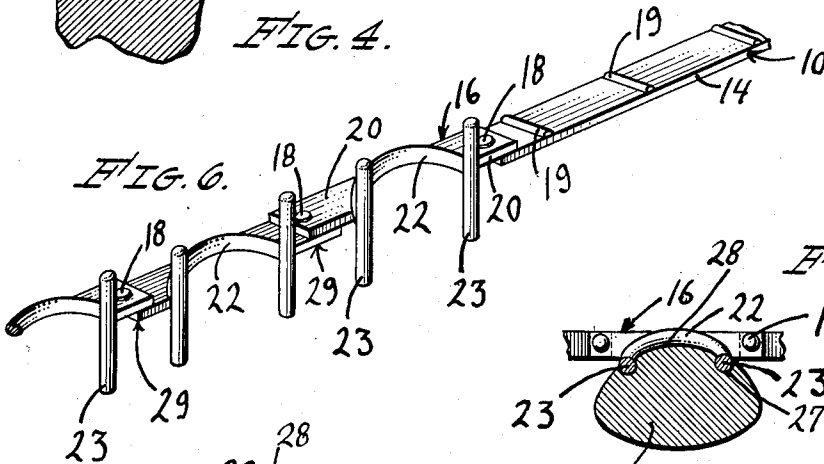


FIG. 6.

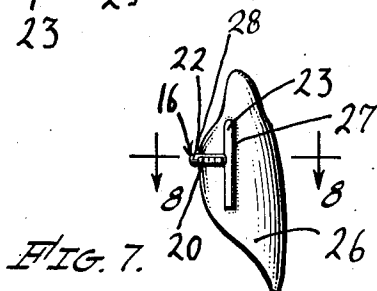
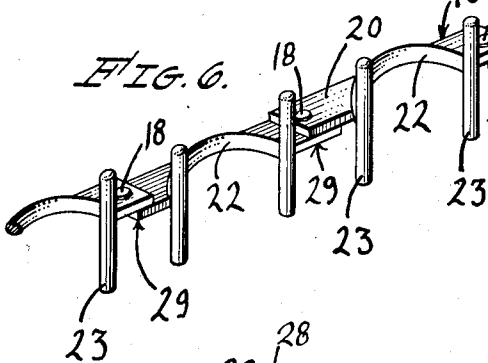
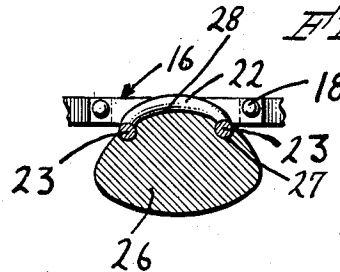


FIG. 7.

FIG. 8.



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## UNITED STATES PATENT OFFICE

2,618,062

## ARTIFICIAL TEETH

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10 Claims. (Cl. 32-2)

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My invention relates to improvements in artificial teeth, and particularly to improvements in the assembly and construction of dentures; and the objects of my invention are, first, to provide an anchor frame adapted to receive and anchor a full set of upper and lower teeth; second, to afford facilities in such anchor frame to adjust each individual tooth horizontally in its relation to neighboring teeth without disturbing the pre-set occlusion between upper and lower teeth; third, to provide means for assembling dentures so that a full set of either upper or lower teeth is arranged as a unit or divided into any number of segments, as a manufacturer or dentist may desire; fourth, to construct a frame for prosthetic dentures in which each tooth may easily be removed or replaced without disturbing the residual denture; and fifth, to provide an anchor frame for prosthetic dentures which simplifies the manufacture of dental plates, reducing at the same time the costs of manufacture and time required to produce them, and giving additional stability and strength to the finished product.

I attain these and other objects by means of the construction and arrangement illustrated in the accompanying drawing, in which—

Figure 1 is a front elevational view of a full set of upper and lower teeth using my anchor frame, and in a flat position;

Figure 2 is a plan view of a set of lower teeth using my anchor frame, in a curved position;

Figure 3 shows an elevational rear view of a molar tooth having a slot for receiving my anchor frame;

Figure 4 is a cross-sectional view of the molar tooth on line 4—4 of Fig. 3;

Figure 5 is an elevational view of a molar tooth showing a portion of my anchor frame and the method by which said tooth is attached to said frame;

Figure 6 is an enlarged fragmentary view in perspective of my anchor frame showing part of an upper anchor band for the attachment of molar teeth and segments for the attachment of front teeth;

Figure 7 is a side elevational view of one of the upper front teeth showing a portion of my anchor frame, and the method by which said tooth is attached to said frame; and

Figure 8 is a cross-sectional view of the upper front tooth on line 8—8 of Fig. 7.

Similar numerals refer to similar parts throughout the several views.

Referring to the accompanying drawing, wherein for the purpose of illustration I show a

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preferred embodiment of my invention, my anchor frame comprises the upper anchor band 10, the lower anchor band 11, and two stability bars 12, 12, which connect the free ends of the anchor bands and holds said anchor bands in a spaced parallel relation.

Each anchor band consists of two identical flat strips of rigid material 14, 14, and 15, 15, respectively, and a plurality of frame segments for upper teeth 16, and for lower teeth 17, respectively, which segments are hinged to each other and to said respective flat strips, 14 and 15 respectively, by the use of pivots 18.

Each flat strip, 14 and 15 respectively, carries transversely a number of ribs 19, spaced from each other a distance approximating the lateral width of an average molar tooth, which said ribs are rigidly affixed to the upper flat side of the upper flat strips 14, and to the under side of the lower flat strips 15.

Stability bars 12, 12, connect the under side of the upper flat strips 14, to the top side of the lower flat strips 15, near the free ends of said flat strips.

The other end of said flat strips is pivotally connected to frame segments, 16 and 17 respectively, by means of pivot 18 in such a way as to permit limited horizontal motion to the frame segments and to the flat strips respectively.

Each upper frame segment 16, and lower frame segment 17, consists of a pair of flat bars 20, 20, rigidly affixed at one end to a horizontally placed semi-circular rod 22, extending outwardly and near the free ends of said rod in linear relation to each other. The other end of each flat bar 20, 20, rests upon, or is supporting flat bars of neighboring frame segments or flat strips, and is pivotally connected thereto by pivots 18, and are forming, what I name an interproximal hinge 29.

Front tooth guide rods 23, are rigidly affixed to each free end of the semicircular rod 22, in a substantially vertical position and at right angles to said semicircular rod. The exact point of attachment of each guide rod to the ends of each semicircular rod varies with the relative horizontal position of each pair of flat bars 20, 20, depending upon whether each of such flat bars rests on the top of, or acts as support for, the flat bar of its neighboring element to which it is pivotally connected.

Such neighboring element may either be another segment, 16 and 17 respectively, or a flat strip, 14 and 15 respectively.

For the purpose of this invention I use arti-

ficial molar teeth 24, having a slot 25, which extends from the rear of each tooth near its upper portion transversely across the whole width to approximately the center of each tooth.

For the purpose of this invention I use artificial front teeth 26, having a pair of substantially vertical grooves 27, 27, in the rear portion of each tooth, adapted to receive guide rods 23, 23, and having a substantially curved semicircular rear portion 28, suitable to fit snugly into the space provided by semicircular rod 22.

The length of the stability bars 12, 12, is designed to hold upper and lower anchor bands, 10 and 11 respectively, in horizontally spaced relation so as to provide a fixed pre-set occlusion between the upper and lower dentures.

In use, each molar tooth 24, is slid into position on the flat strips, 14 and 15 respectively, between any two adjacent ribs 19, 19. The thickness of each slot 25, is designed to fit each molar tooth 24, snugly on said flat strips. After the assembly of the molar teeth is completed, each upper front tooth 26, is pushed upwards into position in each frame segment 16, the grooves 27, 27, and curved rear portion 28, of each front tooth being designed to fit tightly in the space provided by the semicircular rod 22, and vertical guide rods 23, 23. Each lower front tooth is then pushed downwards into position and anchored in the lower anchor band segments in the same manner as heretofore described for the upper front teeth.

The length of the stability bars 12, 12, is designed to provide a pre-set occlusion, as hereinbefore described, and the only adjustment needed ordinarily to manufacture a custom-made denture is the adjustment in the relative horizontal position of each front tooth. This adjustment is effected by the horizontal movement of each of the segments carrying the front teeth by means of the interproximal hinges, so-called because they are located in the interproximal space between front teeth. These interproximal hinges 29, 29, consist of the flat bars 20, 20, of each segment and its adjoining segment or flat strip respectively, and pivot 18, as heretofore described.

If it should become necessary to change the occlusion of any upper front tooth, for example, from its pre-set position, this may be accomplished by cementing such tooth into the segment in the desired spacial relation to its mate in the lower denture.

After all teeth are fixed in their desired horizontal and vertical relative position to each other, the stability bars 12, 12, are cut and removed from the anchor frame 1, and standard procedure is followed from thereon in completing the denture.

In case any particular tooth breaks during use of the dentures, or needs replacement for any other reason, such tooth may be removed from its position on the anchor frame 1, and replaced without disturbing any other tooth in the denture.

While a specific form of my invention has been described, it is understood that the same may be modified without departing from the spirit of my invention as defined in the appended claims.

I claim:

1. In a device of the class described, a plurality of sets of lower and upper flat strips, a plurality of ribs transversely affixed to the upper side of each upper flat strip, a plurality of ribs transversely affixed to the lower side of each lower flat strip, rear teeth having slots through which the flat strips pass, a stability bar affixed to one

end of each set of upper and lower flat strips holding said flat strips in fixed parallel spaced relation to each other, two aligned frame segments so arranged that adjacent ends of the frames are attached together and each free end of a frame has a flat strip attached to it, a semicircular rod horizontally spaced and affixed between the flat bars, and vertically spaced rods attached to the ends of said semicircular rod, and front teeth carrying grooves in which the vertically spaced rods slide.

2. In a device of the class described, a plurality of sets of lower and upper flat strips, a plurality of ribs rigidly affixed in spaced relation to each other and transversely to the upper side of each upper flat strip, a plurality of ribs rigidly affixed in spaced relation to each other and transversely to the under side of each lower flat strip, rear teeth having slots through which the flat strips pass, a stability bar affixed to one end of each set of upper and lower flat strips holding said flat strips in fixed spacial relation and substantially parallel to each other, means pivotally attached to and connecting the lower flat strips to each other, means pivotally attached to and connecting the upper flat strips to each other, and front teeth having grooves in slidable relation to said two last named means.

3. In a device of the class described, a plurality of sets of lower and upper flat strips, a plurality of ribs rigidly affixed in spaced relation to each other and transversely to the upper side of each upper flat strip, a plurality of ribs rigidly affixed in spaced relation to each other and transversely to the under side of each lower flat strip, rear teeth having slots through which the flat strips pass, means affixed to one end of each set of upper and lower flat strips, and holding said flat strips in fixed spacial relation and substantially parallel to each other, means pivotally attached to and connecting the lower flat strips to each other, means pivotally attached to and connecting the upper flat strips to each other, and front teeth having grooves connected in slidable relation to said two last named means.

4. In a device of the class described, a plurality of sets of lower and upper flat strips, rear teeth having slots through which the flat strips pass, a stability bar affixed to one end of each set of upper and lower flat strips holding said flat strips in fixed spacial relation and substantially parallel to each other, two aligned frame segments so arranged that adjacent ends of the frames are attached together and each free end of a frame has a flat strip attached to it, a semicircular rod spaced horizontally between the flat bars and affixed thereto, a plurality of rods spaced in relative vertical position to each other and attached rigidly to the ends of said semicircular rod, and front teeth carrying grooves in which the last named rods slide, and a plurality of segments attached pivotally to each other.

5. In a device of the class described, a plurality of lower and upper flat strips, rear teeth through which the flat strips pass, means connecting each lower flat strip with each upper flat strip and holding said flat strips in fixed spacial relation and substantially parallel to each other, means pivotally attached to and connecting the lower flat strips to each other, means pivotally attached to and connecting the upper flat strips to each other, and front teeth having grooves

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connected in slidable relation to said two last named means.

6. In a device of the class described, a plurality of sets of upper and lower flat strips, rear teeth having slots through which said flat strips pass, means adapted to hold the lower flat strips in fixed spaced relation to the upper flat strips, means pivotally attached to and connecting the lower flat strips to each other, means pivotally attached to and connecting the upper flat strips to each other, and front teeth attached to said two last named means.

7. In a device of the class described, a plurality of sets of upper and lower flat strips, rear teeth having slots through which said flat strips pass, a stability bar affixed to one end of each set of upper and lower flat strips holding said flat strips in fixed parallel spaced relation to each other, means adapted to hold the lower flat strips in pivotal relation to each other, means adapted to hold the upper flat strips in pivotal relation to each other, and teeth having grooves attached to said two last named means.

8. In a denture, the combination of a flat bar having a substantially semi-circular cutout in one of its longitudinal edges, a pair of vertically arranged rods in spaced relation to each other and affixed at a substantially right angle to said flat bar and extending above and below said flat bar, and front teeth having a plurality of grooves and a wedge shaped rear portion which said front teeth are wedged into said cutout with their rear portion and rest between said rods.

9. In a denture, the combination of a flat bar having a substantially semi-circular cutout in one of its longitudinal edges, a plurality of ver-

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tically arranged rods in spaced relation to each other and affixed at a substantially right angle to said flat bar and extending above and below said flat bar, and front teeth having a wedge shaped rear portion said front teeth being wedged into said cutout and resting between said rods.

10. In a device of the class described, a plurality of lower and upper flat strips, rear teeth through which the flat strips pass, means connecting each lower flat strip with each upper flat strip and holding said flat strips in fixed spacial relation and substantially parallel to each other, means pivotally attached to and connecting the lower flat strips to each other, means pivotally attached to and connecting the upper flat strips to each other, each of said two last named means comprising a flat bar having a cutout in one of its longitudinal edges, a plurality of vertically arranged rods in spaced relation to each other and affixed at a substantially right angle to said last named flat bar, and front teeth wedged into said cutout and resting between said rods.

VICTOR P. HENDRICKS.

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