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DENTURE MODELING ARTICULATOR

2 SHEETS--SHEET 1

[illegible]

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2 SHEETS—SHEET 2

Fig. 3

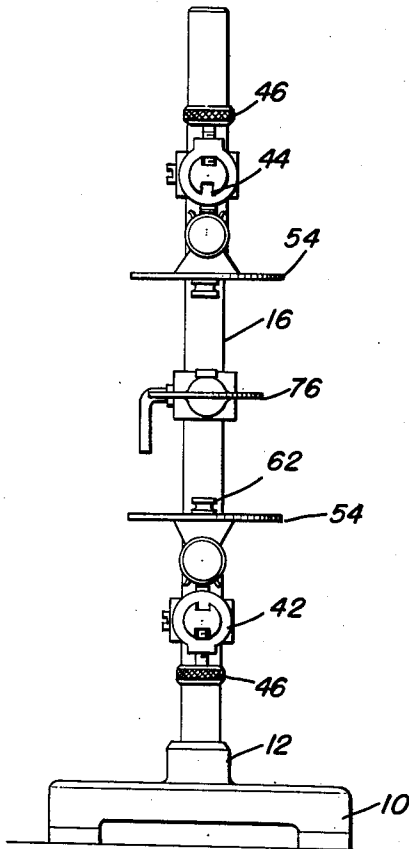


Fig. 4

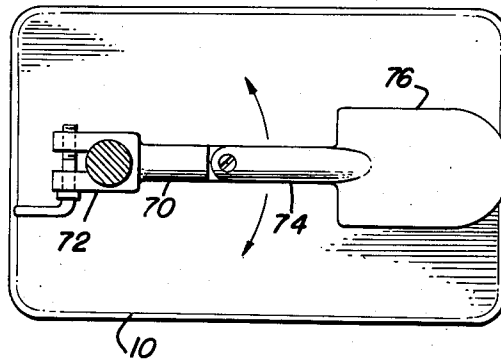


Fig. 5

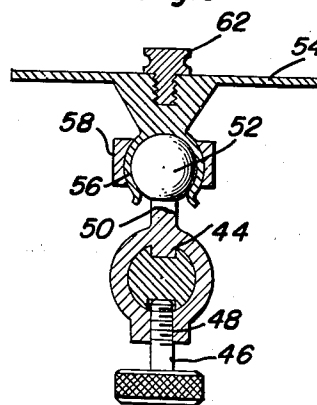
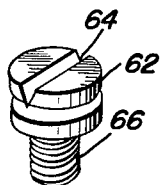


Fig. 6



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DENTURE MODELING ARTICULATOR

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8 Claims. (Cl. 32—32)

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This invention relates to a dental modeling articulator and particularly to an articulator with full floating trays for securing them to a bite of false teeth.

In constructing artificial teeth it is customary to take impressions of the upper and lower gums and to mold models from these impressions on which artificial teeth and gums are constructed. It is a common fault of these artificial dentures that the teeth constructed thereon do not meet in a common horizontal plane. This results in an unnatural bite which tends to twist the gums or ridges or the face of the wearer so as to produce uncomfortable and inefficient results.

The present invention provides a modeling articulator having an artificial occlusal plane and a pair of modeling trays or leveling trays so positioned that they can be adjusted universally so that they fit exactly in a plane of the ridges or gums in a patient's mouth after which they are separated from the occlusal plane by an amount exactly equal to the length of the gums and the teeth. Dentures built on these trays will meet exactly level on the occlusal plane so that there will be no twisting or malformation of the ridges by the teeth.

It is accordingly an object of this invention to provide an improved dental articulator.

It is a further object of this invention to provide an articulator having full floating modeling trays.

It is a further object of this invention to provide a dental articulator having means for establishing the occlusal plane.

Other objects and many of the attendant advantages of this invention will be apparent from the following detailed description taken in conjunction with the accompanying drawings, in which:

Figure 1 is a side elevation of the dental modeling articulator;

Figure 2 is a top plan-view of the articulator;

Figure 3 is a front elevation of the articulator;

Figure 4 is a cross-section taken substantially on a plane indicated by line 4—4 of Figure 1 showing the position of the occlusal plate;

Figure 5 is an enlarged cross-section taken substantially in the plane indicated by line 5—5 of Figure 1 and shows the mount for the modeling tray; and

Figure 6 is an enlarged view of the anchor stud for the models.

From the exemplary embodiment of the invention according to the drawings, the stand or articulator comprises a base 10 having a boss 12

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about an opening 14 in which is mounted a standard 16 either end of which will fit the opening 14. A pair of tray supporting arms 18 and 20 are slidably mounted on the standard 16 and are provided with screw clamps 22 and 24 so that the arms 18 and 20 may be adjustably fixed in any position on the standard 16.

The arms 18 and 20 are identical and as the standard 16 is reversible either of the arms 18 or 20 may be the upper or lower arm as occasion demands. The arms 18 and 20 are mounted in right angular relation to the standard 16 so as the standard 16 is vertical the arms 18 and 20 will be horizontal. Each of the arms 18 and 20 is provided with an articulated joint 26 by which the arms are divided into two portions, the base portions 18 and 20 and the tip portions 28 and 30. The portions 28 and 30 can be bent about the joints 26 to facilitate working on the modeling plate presently to be described. Each of the joints 26 is provided with a stop 32 so that the terminals 28 and 30 will be brought into and stopped exactly in perpendicular relation to the standard 16. Screw means 34 are provided for tightening the joints 26 so that they will be immovable under ordinary working conditions.

Each of the tip portions 28 and 30 is provided with a pair of guideways 36 and 40 which are herein shown as keyways. Obviously, any outer arrangement will do for the guideways 36 and 40.

Mounting sleeves 42 and 44 are mounted on their respective rods 28 and 30 and each of the sleeves is provided with a depending key 44 engaging one of the keyways such as 40. Each of the sleeves 42 and 44 is provided with a locking set screw 46 which is in threaded engagement with an opening 48 and extends into the keyway 36. By loosening the screw 46 the sleeves 42 and 44 may be slid along the arms 28 and 30 respectively and then tightened into locking position in any desired position.

Each of the sleeves 42 and 44 is provided with a mounting post 50 which terminates in a ball 52. Upper and lower modeling trays 54 are mounted on their respective balls 52 by means of sockets 56. The ball and socket 52 and 56 provides a completely universal mounting between the post 50 and the modeling trays 54.

A collar 58 is arranged around the ball and socket joint and a screw 60 is arranged in the collar to tighten the ball and socket joint to make it immobile after it has been adjusted. Preferably anchor studs 62 are provided on each of the modeling trays 54. The anchoring stud 62 is preferably provided with an uneven or anchoring

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surface such as a groove 64 for conveniently holding the wax or other material from which the models are made. A screw stud 66 may be attached to the head 62 for conveniently attaching the stud to the trays 54.

A central arm 70 is attached on the standard 16 by means of a clamp head 72. The arm 70 is jointed somewhere in the intermediate portion thereof to provide a terminal portion 74 on which is mounted a plate, rod or other means 76 for establishing the occlusal plane between the opposed plates 54. In the operation of the modeling device the operator first makes impressions of the upper and lower ridges of the patient. From these impressions models of the upper and lower gum or ridges of the patient are produced. These models are mounted on the upper and lower plates 54 respectively. After these models have been mounted on the plates 54 an impression of both uppers and lowers is made in a single wax or other material and the occlusal plane or parting line of the teeth is definitely marked at the forward part of this impression. This one piece impression is placed between the upper and lower models on the plates 54 and all of the joints or adjusting means are loosened so that the upper and lower models may definitely and accurately fit into this one piece impression. As soon as everything is adjusted so that the upper and lower models definitely and accurately adjust and fit into the one-piece impression all of the adjustments are tightened in position. This provides a modeling plate or tray on which the model of the uppers or lowers respectively are in exactly the same position as they are in the mouth of the patient. The upper and lower arms are then adjusted away from each other and the one piece impression is taken out and disposed of. The trays are then definitely positioned a predetermined distance from the occlusal plane and a scale 80 on the standard 16 may well assist in this positioning. Preferably the occlusal plane is established by such means as a plate 76 which can be interposed between the modeling trays 54. With the occlusal plane definitely established with relation to the modeling trays wax or other modeling material is built up between the trays and on the gum models to produce a definite height on artificial gums. These gums of course may be modeled if desired to produce facial expressions as with natural gums. After the gums have been modeled to the right height the teeth are attached in the usual manner.

It will thus be seen that a modeling device has been constructed in which artificial gums will snugly and definitely fit the ridges of the patient while the teeth will mate on an even horizontal plane. This results in an even natural bite without any twist or distortion to the patient's ridges.

While for purposes of illustration a particular embodiment of the invention is shown and described according to the best present understanding thereof it will be apparent to those skilled in the art that many changes and modifications can be made therein without departing from the true spirit of the invention.

Having described the invention, what is claimed as new is:

1. A denture modeling articulator comprising a base, a vertical standard mounted in said base, a pair of tray arms slidable on said standard, a central arm slidable on said standard, each of said arms being positioned at right angles to said standard, means for detachably locking said arms in place on said standard, articulated joints in

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said upper and lower arms, stop means for positioning said upper and lower arms in a plane perpendicular to said standard, upper and lower guideways on each of said arms, a sleeve on each of said arms, a key in said sleeve, said key being received in one of said guideways, a locking screw in threaded engagement with said sleeve, said screw being received in the other guideway, a post on said sleeve, a ball terminal on said post, a tray support, a socket on said tray support, said socket receiving said ball, a collar around said ball and socket, means for tightening said collar to immobilize said ball and socket, a tray on said support, an anchoring stud secured on said tray, a horizontal plane plate mounted on said central standard.

2. A denture modeling articulator comprising a base, a vertical standard mounted in said base, a pair of tray arms slidable on said standard, a central arm slidable on said standard, each of said arms being positioned at right angles to said standard, means for detachably locking said arms in place on said standard, upper and lower guideways on each of said arms, a sleeve on each of said arms, a key in said sleeve, said key being received in one of said guideways, a locking screw in threaded engagement with said sleeve, said screw being received in the other guideway, a post on said sleeve, a ball terminal on said post, a tray support, a socket on said tray support, said socket receiving said ball, a collar around said ball and socket, means for tightening said collar to immobilize said ball and socket, a tray on said support, an anchoring stud secured on said tray, a horizontal plane plate mounted on said central standard.

3. A denture modeling articulator comprising a base, a standard selectively mounted in said base, a pair of tray arms slidably mounted on said standard, a central arm slidably mounted on said standard, said arms being mounted at right angles to said standard, clamping means for locking said arms in fixed relation to said standard, sleeves slidably mounted on said upper and lower arms, means for preventing rotation of said sleeves on said arms, clamping means for fixing said sleeves on said arms, a post on each of said sleeves, a tray support, a ball and socket joint between said post and said tray support, clamp means for locking said ball and socket joint, a tray on said support, a model anchor secured on said tray.

4. A denture modeling articulator comprising a base, a standard selectively mounted in said base, a pair of tray arms slidably mounted on said standard, a central arm slidably mounted on said standard, said arms being mounted at right angles to said standard, clamping means for locking said arms in fixed relation to said standard, sleeves slidably mounted on said upper and lower arms, means for preventing rotation of said sleeves on said arms, clamping means for fixing said sleeves on said arms, a post on each of said sleeves, a tray support, a ball and socket joint between said post and said tray support, clamp means for locking said ball and socket joint, a tray on said support, a plate mounted on said central arm, said plate swingable in a plane transverse to said standard.

5. A denture modeling stand comprising a base, a standard mounted in said base, a pair of tray arms adjustably mounted on said standard, a modeling tray mounted on each of said arms, said trays being fully floating and means to lock said trays in position, a central arm adjustably

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mounted on said standard, an occlusal plate mounted on said central arm.

6. A denture modeling stand comprising a base, a standard mounted in said base, a pair of tray arms adjustably mounted on said standard, a modeling tray mounted on each of said arms, said trays being fully floating and means to lock said trays in position, a central arm adjustably mounted on said standard, an occlusal plate mounted on said central arm, means for positioning said modeling trays, a predetermined distance from said occlusal plate.

7. A denture modeling device comprising a base, a standard selectively mounted in said base, a pair of arms adjustably mounted on said standard, means for releasably fixing said arms on said standard, a support slidably mounted on each of said arms, clamp means for fixing said supports on said arms, a pair of modeling trays, a full floating connection between each of said trays and its respective arm, means for fixing said trays in adjusted position, an occlusal plate interposed between said trays.

8. A denture modeling articulator comprising a base, a standard selectively mounted in said base, a pair of tray arms slidably mounted on said

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standard, a central arm slidably mounted on said standard, said arms being mounted at right angles to said standard, clamping means for locking said arms in fixed relation to said standard, sleeves slidably mounted on said upper and lower arms, means for preventing rotation of said sleeves on said arms, clamping means for fixing said sleeves on said arms, a post on each of said sleeves, a tray support, a ball and socket joint between said post and said tray support, clamp means for locking said ball and socket joint, a tray on said support, means for establishing an occlusal plane between said upper and lower arms.

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