Sept. 30, 1952 I. G. NEER 2,611,961

DENTAL ARTICULATOR

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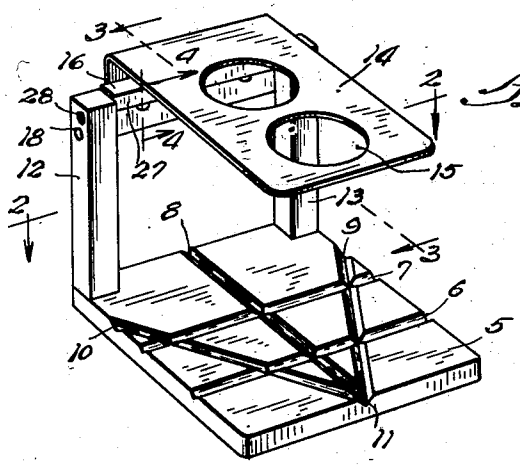


Fig. 1.

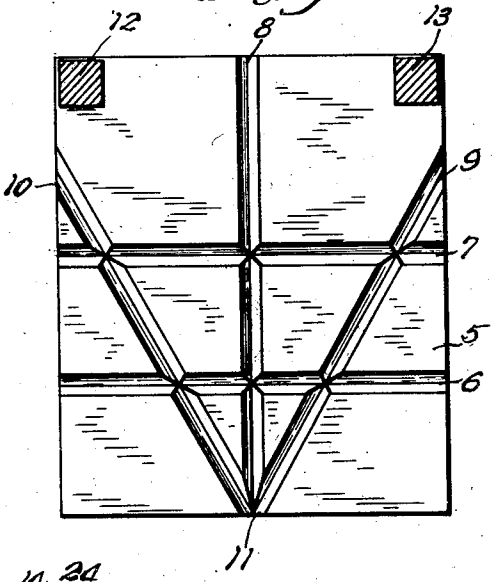


Fig. 2.

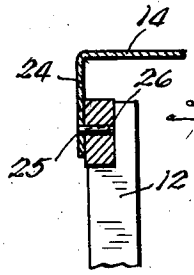


Fig. 4.

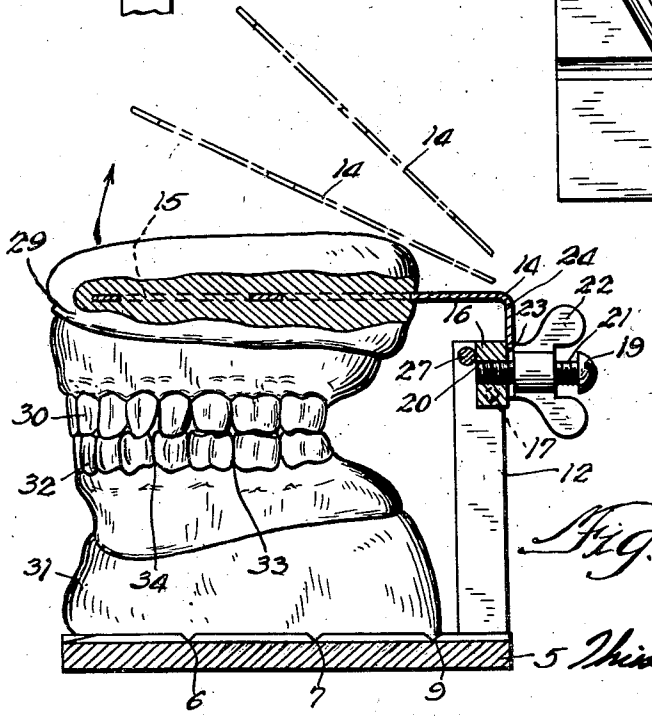


Fig. 3.

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DENTAL ARTICULATOR

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2 Claims. (Cl. 32—32)

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The present invention relates to improvements in dental articulators.

In the making of dental bridgework to replace one or more teeth, it has been customary for dentists to employ temporary mounting means for the upper and lower casts on which the bridgework is constructed. This temporary mounting is known as an articulator, the purpose of which is to enable adjustments to be made in contact between the upper and lower teeth as well as contact in teeth of the same order while out of the patient's mouth.

Generally speaking they have consisted of two separate and usually hinged portions supported upon a suitable support, both of the portions usually being hinged so as to be movable reciprocally of each other.

More recent practice, however, has been to employ an articulator in which one of the supports for the casts is stationary and only the other one is hinged.

The present invention relates primarily to that type of articulator in which the one portion is stationary, that is to say, is a base supporting upright supports, to which latter the other part of the articulator is suitably hinged.

In the articulators hitherto in use, it is almost invariably necessary firmly to secure the upper and the lower casts to the articulator so that there would be no likelihood of even a slight shift in the position thereof relative to each other, and therefore it was necessary to employ either a large number of the articulators, one for each of the sets of casts in process, or else to use great pains when re-mounting them on an articulator for further adjustment or changes therein.

While some articulators are known in which the lower portion has upwardly projecting prongs or detents which are intended to register with corresponding openings in the supporting medium in which casts are mounted, which supporting means usually are some form of plaster of Paris, it is very difficult, if not substantially impossible, to re-assemble such a block of plaster of Paris in absolutely accurate alignment and position after it has once been removed from the metallic supporting structure of the articulator.

As it is frequently necessary to cut apart the plaster of Paris casts so as to do a certain amount of work on the spaces between the individual teeth, it has been found necessary to devise some means so that such a block, when once cut apart, can subsequently be re-assembled with the absolute assurance of having the block return to the exact and precise position relative to the corresponding opposed cast so that the bite, when once adjusted, will not subsequently be changed.

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Accordingly it is one of the objects of the present invention to provide an articulator having a base provided with grooves so aligned that when a plaster of Paris supporting block is cast thereon it will provide itself with outwardly extending projections which are so oriented relative to each other that even if such a block be cut into two or more pieces, yet they could only be reassembled in the exact relationship in which the projections extend on the original casting.

It is a further object of the present invention to provide an articulator having a base containing longitudinal, transverse, and also oblique grooves or channels therein to serve for the above mentioned purposes.

It is a further object of the present invention to provide means for hinging one of the supporting plates of the articulator in such a manner that if removed and subsequently replaced, it also will return to the exact position which it had previously occupied.

Other objects of the invention will become apparent from the further description herein below when considered in connection with the accompanying drawing in which:

Fig. 1 is a perspective view of the articulator constructed in accordance with the present invention;

Fig. 2 is a section taken along the line 2—2 of Fig. 1, this being on substantially full sized scale as contrasted with the reduced scale of Fig. 1;

Fig. 3 is a section through the articulator also showing a set of mounted dentures which latter for clarity of explanation are not in section; and

Fig. 4 is a sectional view of a part of the hinge structure taken along the line 4—4 of Fig. 1.

The articulator consists primarily of a base 5 which is rectangular in shape and which is provided with two transverse grooves 6 and 7, a longitudinal groove 8, and two diagonal grooves 9 and 10 which are so positioned that they will meet at the forward terminus of the longitudinal groove 8 forming a V, the apex of which is at the point 11. At the rearward ends of the base plate 5 there are two upright supports 12 and 13 which serve to support the hinge structure upon which the plate 14, that serves to support the upper cast, is in turn mounted; the

said plate in accordance with well known practice being provided with one or more holes 15.

In order to mount the plate 14 upon the supports 12 and 13 there is provided a transversely extending hinge member 16 which is journaled on pivots 17 and 18 (see Figs. 1 and 3, as the pivot 17 is not visible in Fig. 1, but is shown in Fig. 3).

The plate 14 is attached to the hinge member 16 by aid of a screw 19, one end of which is permanently screwed into the threaded opening 20 (see Fig. 3), leaving, however, a considerable number of threads 21 free between the head of the screw and the portion which engages the threaded opening 20. A wing nut 22 threaded upon said threads 21 may be moved from abutment with the head 19 to a point in which it may abut against the outside of the hinge member 16. The plate 14 is provided with a notch 23 which is of a size just to subtend the threaded portion of the screw 19 which lies between the face of the wing nut 22 and the downwardly bent portion 24 of the plate 14. This downwardly bent portion of the plate 14 is provided with two or more openings 25, and the hinge member 16 is provided with pins 26 which extend a short distance beyond the hinge member 16. These pins 26 are intended for accurate engagement with the holes 25 in the downwardly extending portions 24 of the plate 14.

Therefore, when the notch 23 is placed over the threads 21 of the screw 19 and the holes 25 are in engagement with the protruding portions of the pins 26 and the thumb screw 22 then tightened, the plate will thus be accurately affixed to the hinge member 16. In order to prevent the hinge member from moving beyond a vertical position and also therefore to keep the plate 14 in a substantially horizontal position, a stop 27 is provided, which may take the form of a rod that extends into and preferably through the upright supports 12 and 13 and may be suitably secured thereto, as for example by screws 28.

Therefore the plate 14 may serve to support a block of cementitious material for example plaster of Paris 29, which carries the model or cast 30. This plaster of Paris passes through the openings 15 in the plate 14 thus tightly locking the plate and the block of plaster of Paris into a single unit, which, however, can be swung about the pivoting member 17 of the hinge member 16 so as to assume the changed positions indicated in dotted lines in Fig. 3.

Resting upon the base plate 5 there is shown (in Fig. 3) a block of plaster of Paris 31 which supports the set of teeth 32 to be operated upon. Particular attention is directed to the fact that when the lower plaster of Paris block 31 is resting upon the base plate 5, some of the plaster will extend into the grooves 6, 7, 8, 9 and 10, in the form of outwardly directed elongated projections.

Now, if the dentist desires to saw the block 31 into two or more pieces so as to obtain access to the spaces, for instance 33 or 34, between the teeth, he can remove the block 31 from the base 5 and saw it apart, as for instance for making a wax pattern. He can then later re-assemble the block 31 on the base with the absolute assurance that the relative position of the teeth not only relative to each other on the cast 32 but also relative to the cast 30, will be exactly as it was before the removal of the block 31 and the cutting of it into parts.

This is due to the fact that there will only be one possible way of re-assembling the block so that the projections thereon would fall back into position in the grooves on the base of the articulator.

The articulator is preferably made of metal but of course can be made of any other suitable material such as a sufficiently rigid or heavy material or even glass, stone or the like. As aforementioned, the primary advantages of the present articulator lie in the accuracy of re-positioning both the upper as well as the lower casts and the means employed for permitting the lower block to be cut apart and then re-assembled into accurate relative position.

Accordingly applicant claims:

1. A base for an articulator comprising a rectangular plate having a deep longitudinal centrally located groove, two deep parallel transverse grooves intersecting said longitudinal groove, and two deep diagonal grooves meeting to form a V having its apex coincidental with one end of said longitudinal groove, each of the diagonal grooves intersecting said transverse grooves and terminating at the sides of the plate.

2. In an articulator, means for accurately positioning a denture-model-supporting block which comprise a hinge-member swingingly supported between two vertical posts, outstanding projections on one side of said hinge-member, a screw extending from said hinge-member in the same direction as said projections, and a plate having a downwardly directed flange provided with openings in engagement with said projections and an opening through which said screw passes, a nut being threaded on said screw for fastening the flange to said hinge-member.

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