Dec. 21, 1965 J. F. TURNER 3,224,095

DENTAL ARTICULATOR

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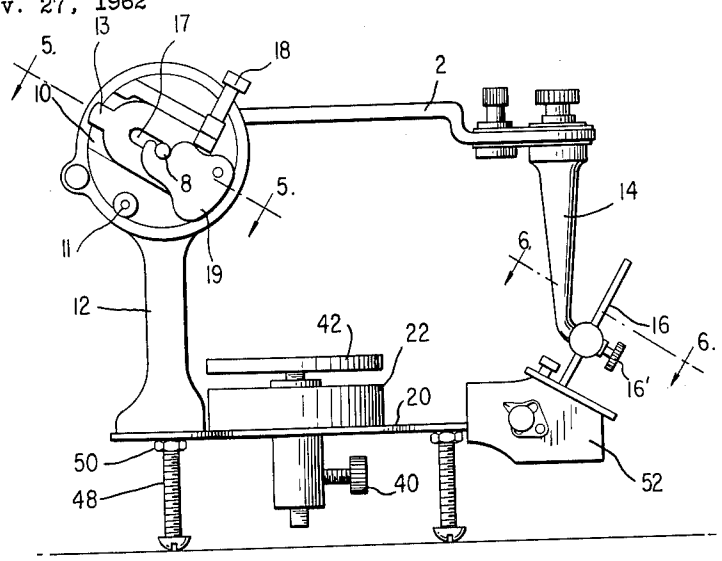


FIG.1

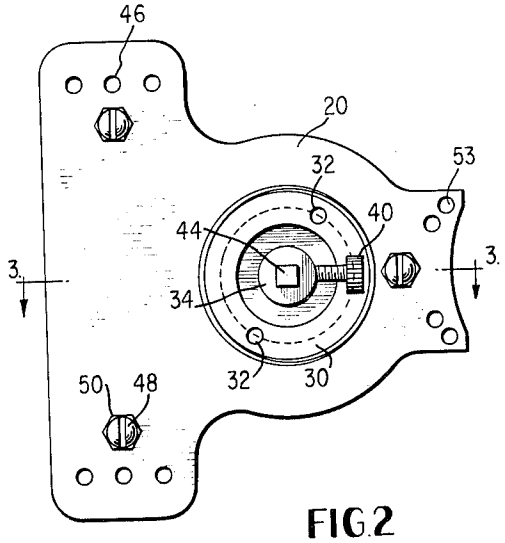


FIG.2

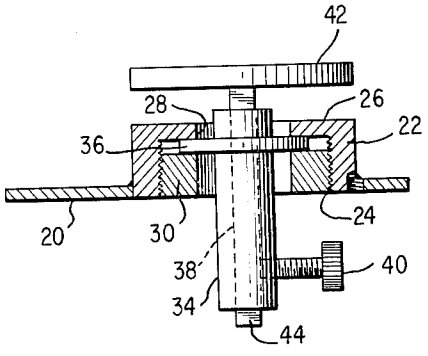


FIG.3

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FIG. 4

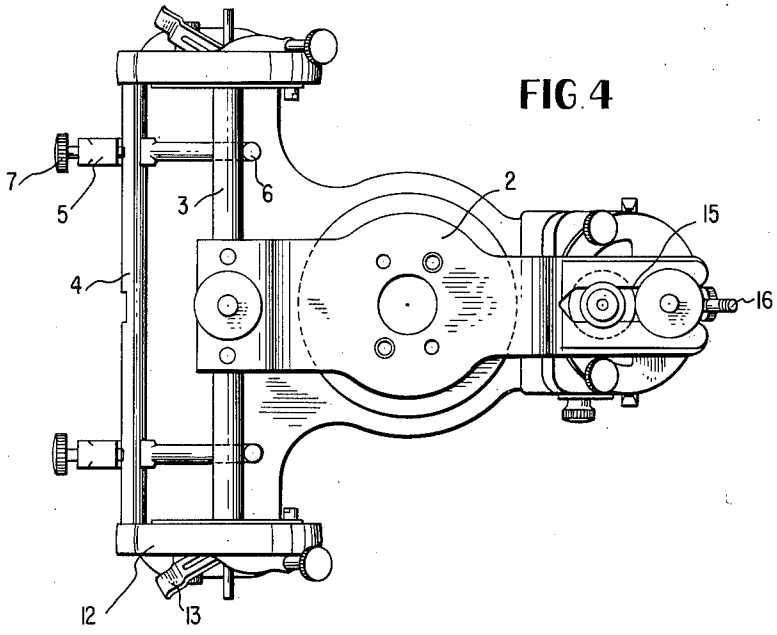


FIG. 5

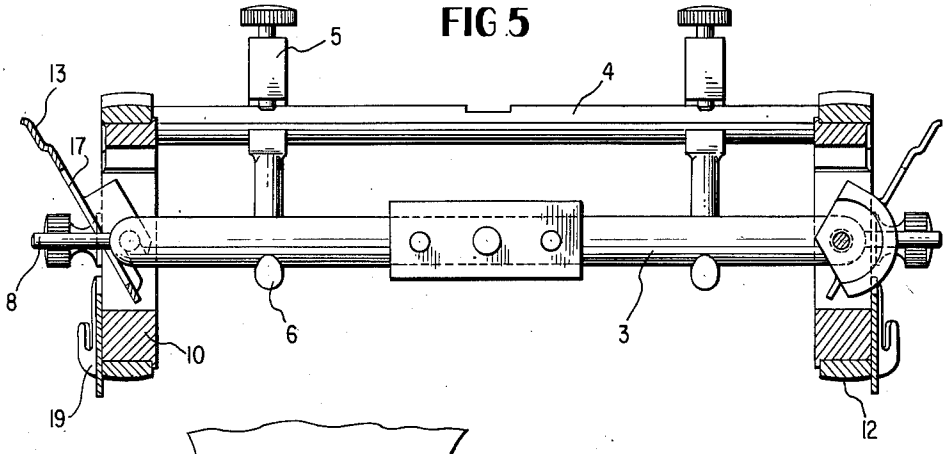
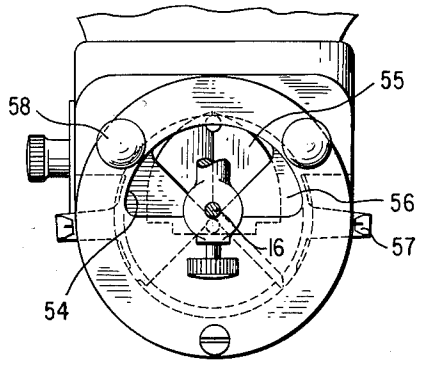


FIG. 6



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3,224,095

DENTAL ARTICULATOR

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2 Claims. (Cl. 32—32)

This invention relates to dental articulators. Its object is to provide an adjustable mounting for the lower denture so that the relation of the dentures may be corrected and the teeth may be ground together properly under uniform pressure.

A further object is to provide a mounting for the lower denture which may be adjusted vertically and horizontally. This is a simple and inexpensive device adapted for use with different types of articulators.

A still further object of the invention is in establishing the proper relation of the dentures in an articulator and in grinding the teeth together properly by adjustment of my attachment and by maintaining uniform pressure through use of the incisor pin and guide.

In the manufacture of artificial dentures to function at maximum efficiency, the correct jaw relation is most important and it must be maintained throughout the construction of the dentures. This relation may be affected by different factors, such as the patients themselves, or expansion and contraction of the materials of which the dentures are made. After processing and polishing the dentures, it is necessary to return them to the mouth of the patient, so that any inaccuracies may be discovered. This step, known as "checking the bite" and equalizing the pressure between the dentures is quite difficult and exacting because it is almost impossible to get the patient to close the jaws in correct centric relation.

My invention overcomes this problem by providing for adjustment of the dentures after remounting in the articulator, regardless of the accuracy of the closure by the patient. By this adjustment, the operator is enabled to establish the correct relation of the dentures in accordance with previous measurements. After the dentures have been properly adjusted, the teeth may be ground in by movement of the articulator, the movement being controlled by adjustment of the articulator in known manner, with use of the incisor guide pin to maintain uniform pressure between the dentures. With my invention, this uniform pressure will be maintained throughout the grinding operation.

One embodiment of the invention is shown in the drawings and described below, with the operation set forth in detail to enable anyone skilled in the art to make and use the method and apparatus constituting the invention.

In the drawings:

FIGURE 1 is an elevation of a dental articulator with my attachment;

FIGURE 2 is a bottom view of the attachment;

FIGURE 3 is a cross section on line 3—3 of FIGURE 2;

FIGURE 4 is a top plan view of the articulator of FIGURE 1;

FIGURE 5 is a cross section on line 5—5 of FIGURE 1; and

FIGURE 6 is a cross section on line 6—6 of FIGURE 1, showing the incisor guide in plan view.

The novel attachment shown may be associated with different articulators, the one shown here by way of example being known as The House Articulator, from The Dentists Supply Co., of New York, N.Y.

In this articulator, a top frame 2, on which may be secured an upper denture, is fastened to a rod 3, by which it is mounted for movement to simulate the relative movement of upper and lower jaws. The rod 3 is carried in disks 10 mounted in the uprights 12.

The uprights also carry a fixed rod 4 on which are mounted members 5 with hooks 6 to engage the rod 3 and clamping screws 7 for clamping to rod 4. These members 5 may be used to maintain the rod 3 and frame member 2 in a fixed position.

Each disk 10 is rotatable in its support 12 and may be fixed against rotation by clamping screw 11. A guide member 13 pivoted on each member 10, as seen in FIGURE 5, has a slot 17 receiving the reduced pintle 8 on rod 3 and may be secured in adjustel position by a clamping member 18. A pivoted clip 19 on disk 10 may engage the pintle 8 as shown in FIGURE 1, to prevent movement of pintle 8 in slot 17.

The frame also carries the incisor guide pin post 14 adjustably secured to the frame in slot 15. The guide pin 16 is secured to the post by adjusting screw 16'.

The novel attachment is in the form of a base plate 20 which may replace the base plate of the articulator. This plate 20 is secured to the lower ends of uprights 12 so that the uprights are supported on its upper surface. The plate is formed with a cylindrical wall 22 projecting above its upper surface substantially in line with the portion of the upper mounting plate on which the upper denture may be mounted. This wall is threaded internally at 24 and has an end wall 26 with an aperture 28. A clamping ring 30 is threaded into the wall and has recesses 32 for engagement by a spanner wrench.

A cylindrical supporting member 34 of less diameter than aperture 28 and the clamping ring 30 extends vertically through the aperture and ring and has a flange 36 of less diameter than the cylindrical wall which may be clamped between the end wall 26 and clamping ring 30. The supporting member 34 has sufficient clearance that it may be shifted in any direction to a limited extent, and can be secured in position by clamping ring 30.

The supporting member 34 has a vertical polygonal aperture 38 therethrough and carries a set screw 40 which intersects the aperture. A mounting plate 42 for the lower denture is formed with polygonal post 44 which extends into aperture 38 and is fastened in vertically adjusted position by set screw 40. With this construction, the mounting plate may be moved vertically in the guide aperture 38, and is also guided in horizontal movement by the contact of the flange 36 of the supporting member 34 with the plane surface of the end wall 26 on base plate 20.

The base plate 20 has holes 46 for securing the plate to the uprights of an articulartor and rests on legs 48 threaded into the plate and locked against rotation by lock nuts 50. A conventional incisor pin guide 52 secured to the base plate 20 by screws (not shown) in holes 53 is engaged by the incisor pin 16. This guide has an opening 54 in the top through which pin 16 extends to rest on plates 55 below the opening. At each side of the opening, a plate 56 may be adjusted by the lug 57 to limit the lateral movement of the guide pin 16, and clamped in position by screw clamp 58.

The articulator with my attachment is especially designed for "checking the bite" and grinding the dentures. After the dentures have been processed and polished, they are returned to the mouth of the patient for "checking the bite" and equalizing the pressure between the dentures. A soft, settable material is placed between the teeth and the patient brings the teeth together lightly to equalize the pressure, deliberately disregarding whether the patient closes in predetermined centric or not. After the material between the teeth has hardened, the dentures are removed from the patient's mouth, luted securely together with red stick compound, as indicated by the material between the teeth, and remounted in

an instrument carrying my invention. After the material that fastens the dentures to the instrument has set, the red compound may be broken away, thus freeing the upper and lower teeth.

If the teeth are found not to be in the relation originally determined to be correct, the operator loosens the clamping ring **30**, adjusts the lower teeth to the correct position that has been previously determined, and then tightens the ring to hold the teeth in correct position.

The teeth may be ground in with the incisor guide pin in place. The lower teeth are fed against the upper by loosening the set screw **40** and adjusting the mounting plate **42** as the grinding proceeds. Movements of the upper denture may be determined by the adjustment of the slotted members and disks **10**, and the incisor pin **16** and incisor pin guide **52**. Thus in known manner, relative movements of the jaws may be simulated by setting the several adjustable members according to the jaw movement of the individual patient.

The attachment may form a part of any suitable type of articulator and is not limited to the one shown. Various modifications in structure may be made within the spirit of the appended claims.

I claim:

1. The method of completing artificial dentures which comprises the following steps:

(1) Placing the dentures after processing in the patient's mouth with soft settable material between the teeth and allowing the material to harden

(2) Removing the dentures and cementing them together

(3) Securing the dentures while cemented together on the mounting plates of a dental articulator

(4) Removing the cement compound to separate the teeth

(5) Adjusting the mounting plate carrying the lower denture to establish correct centric relation of the teeth

(6) Grinding the teeth together with grinding compound by moving the upper denture while maintaining the correct pressure by supporting the incisor guide pin of the articulator on the base of the articulator

(7) Feeding the lower denture toward the upper denture by upward movement to maintain the teeth in contact, so that uniform pressure is maintained between the teeth.

2. An attachment to replace the base of a dental articulator in which a frame for holding the mounting for the upper denture carries a post to which is secured an incisor guide pin and is supported by adjustable pivots on a pair of uprights for slidable and angular movements simulating the relative movements of the human jaw, said attachment comprising a base plate having legs detachably fastened to its under side for supporting

the articulator on a surface and having means at one side for detachably fastening and supporting said uprights on its surface and formed with a cylindrical wall integral with and extending upwardly from said base plate and opening on its lower side, said cylindrical wall being internally threaded and having a plane, transverse wall parallel to said base plate across its upper end vertically spaced above said base plate and with an aperture in said transverse wall, a clamping ring threaded into said cylindrical wall, a cylindrical member of smaller diameter than the internal diameter of said clamping ring and said aperture extending through said aperture and ring and provided with a radial flange below its upper end of greater diameter than said aperture and of less diameter than said cylindrical wall and clamped between said transverse wall and said ring, said cylindrical member and flange having sufficient clearance in said aperture, said cylindrical wall and said ring that it may be moved laterally in any direction and clamped in position by said ring with said flange parallel to said base plate, said cylindrical member having a polygonal, vertical aperture therethrough perpendicular to said transverse wall and said radial flange, and a set screw extending through the side of said cylindrical member to intersect said aperture in said cylindrical member, and a mounting plate for the lower denture formed with an integral, vertically extending polygonal post slidably and nonrotatably fitting in said aperture in said cylindrical member and held in vertically adjusted position by said set screw, said post and flange maintaining said mounting plate parallel to said base plate with said flange above said base plate to provide clearance for said cylindrical member and post above the surface supporting the articulator, and means on the side of said base plate opposite said one side for detachably fastening a guide for engagement by said incisor guide pin secured to said frame for holding the mounting for the upper denture.

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