June 30, 1931. J. A. STREKER 1,812,381

ARTICULATOR

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Fig. 1.

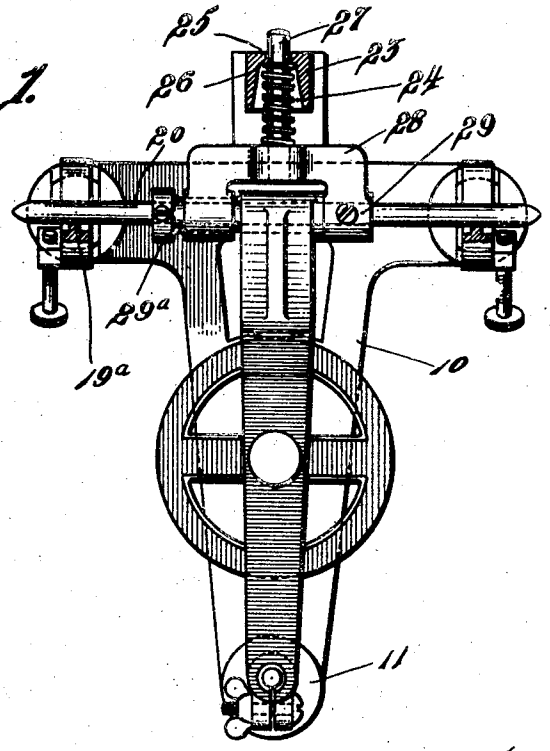
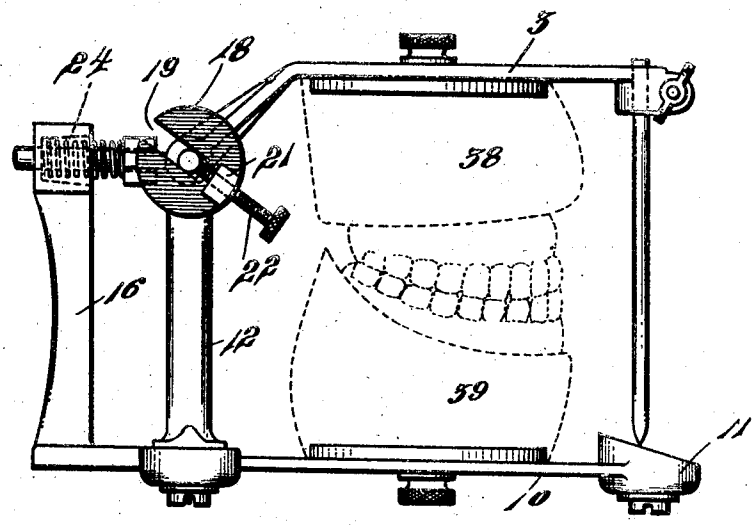


Fig. 2.



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Fig. 4.

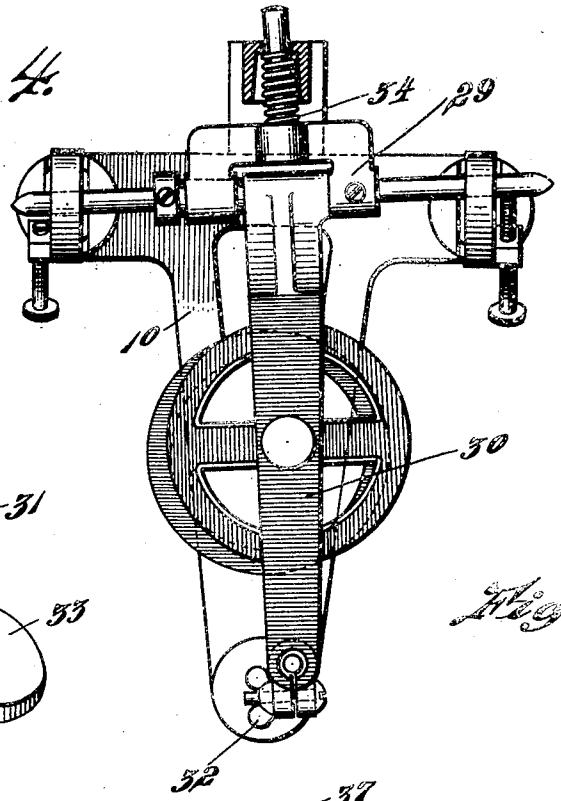


Fig. 5.

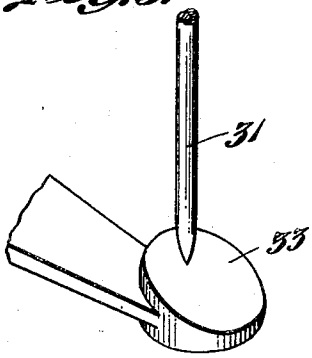


Fig. 6.

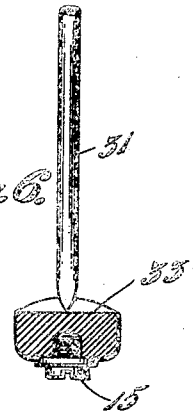
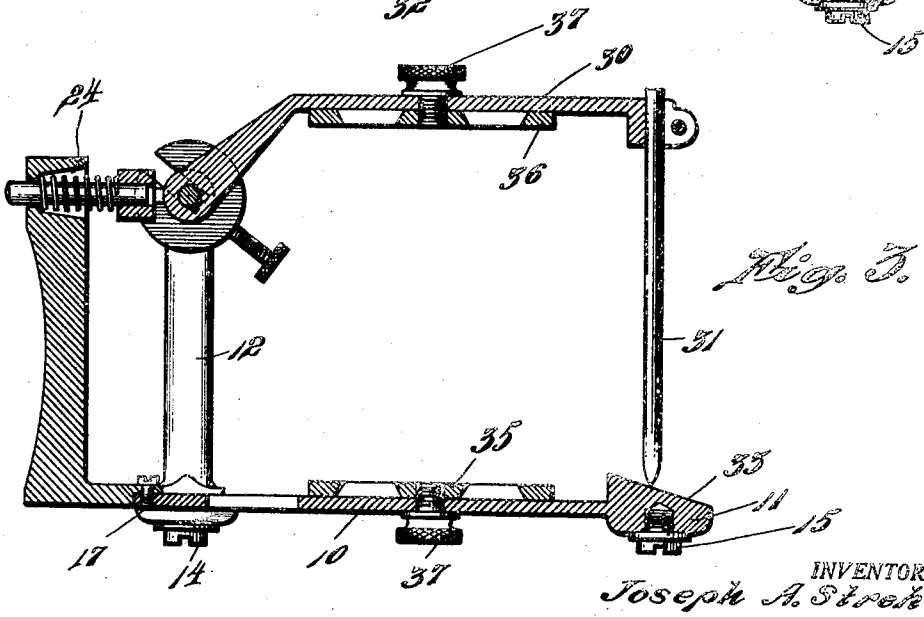


Fig. 3.



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Patented June 30, 1931

1,812,381

UNITED STATES PATENT OFFICE

JOSEPH A. STREKER, OF PROVIDENCE, RHODE ISLAND

ARTICULATOR

Application filed May 1, 1929. Serial No. 359,558.

The present invention relates to the class of devices known as dental articulators, and has particular reference to a construction for holding dentures for the proper shaping of false teeth, inlays, crown and bridge work.

The principal object of the invention is the provision of a dental articulator in which the mandibular motions and the occlusional relations of the human jaw may be accurately simulated.

Another object is to provide an instrument which will reproduce average jaw movements, thus eliminating any need for multiple adjustments, and requiring use of the human jaw for final ultimate adjustment only.

A third object of the invention is to provide an articulator which normally reproduces central occlusion, and which may be positioned to reproduce right-lateral, left-lateral, or protrusive occlusion, as desired.

A further object is the provision of an articulator of this type which is simple in construction, is inexpensive to manufacture, and is easily assembled.

Further objects and advantageous features will be readily apparent from the detailed description following in conjunction with the accompanying drawings, wherein;

Fig. 1 is a top plan view of the improved articulator in central occlusion position.

Fig. 2 is a side elevation of Fig. 1, the dentures and supporting blocks being indicated in dotted lines.

Fig. 3 is a central sectional view of Fig. 2.

Fig. 4 is a top plan view, partly in section, of the articulator adjusted for left-lateral occlusion.

Figs. 5 and 6 are respectively views of the incisor guide and guide block in perspective, and partly in section.

The proper mounting of a denture requires a relative movement of the upper and lower plates which will accurately simulate the movements of the human jaws, the lower human jaw being hinged so as to move backwards, upwards and laterally at the same time. The improved articulator therefore hinges the upper plate on a cross rod to move vertically upward and downward, mounts the cross rod in inclined slots in the frame so that a backward movement will cause a simultaneous upward movement, and pivots the cross rod at a point in back of the inclined slot mounting by means of a rearwardly extending pin so that a horizontal movement of the upper plate will also cause a lateral shift of the upper plate. An irregular movement of the incisor guide pin on the inclined guide surface can thus be made to produce a corresponding backward, upward, and lateral movement of the upper plate with respect to the lower plate. In addition, if it is desired to obtain right-lateral, left-lateral, or protrusive occlusion, the cross bar may be initially set to reproduce the natural occlusion by adjusting a pair of setting screws which shift the cross-bar ends along the inclined slots.

Considering Figs. 1 and 2, the articulator comprises a base 10, generally T-shape, having a guide block 11 integral therewith at one end. Two vertical bearing standards 12 are removably positioned at the ends of the cross piece in machined slots 13, by means of studs 14; a similar stud 15 engages block 11, cooperating with the studs 14 to form supporting feet for the articulator. At the center and to the rear of the cross piece, in alignment with the guide block, is an offset bearing standard 16, removably secured to the base 10 by screws or the like 17.

Each bearing standard 12 is enlarged at its upper end 18 to provide an angularly-disposed, preferably radial, bearing slot 19 which receives a cylindrical cross bar 20, small bosses 21 in each upper end 18 of the bearing standards having manually adjustable setting screws 22 in alignment with slots 19 for setting the cross bar, as hereinafter described.

The base of each slot 19 has a small projection 19^a, preferably formed as the head of a small set screw or the like, inset into the base of the slot, the small projection being contacted by the cross bar in order to facilitate accurate initial setting, and in use, to minimize friction.

The bearing standard 16 which is set to the rear of the pivoted cross bar 20, has an en-

larged upper end 23 with a central tapered recess 24 at one end thereof, and a central bore 25 at the other end thereof, of smaller diameter than the recess 24 in order to provide a thrust shoulder 26. Slidably and swingingly positioned within the recess and bore is one end of a pin member 27, the other end being secured, as by threading or the like, to a yoke 28 which has bored arms 29 slidably positioned on cross bar 20 and locked in central position thereon by set screws or the like.

One arm of the yoke is internally screw threaded to receive a threaded bushing 29ª which bears against the end of the upper link 30 to lock said link 30 in proper aligned position and to take up wear, this bushing being secured to the cross bar by a set screw or the like.

Rotatably mounted between the arms 29 on the cross bar 20 is an upper link 30 split at its forward end and recessed to receive an incisor guide pin 31; the guide pin is adjustably positioned, by means of a wing bolt tightener 32, vertically above the inclined guide plane 33 of the guide block 11, in order to permit the jaws of the denture to be positioned the same distance apart as the human jaws were at the time the dental impression was taken. A coil spring 34 on the pin 27 abuts against the shoulder 26 at one end and against the yoke 28 at the other end, thus normally forcing the yoke, the cross bar, and the upper link forwardly into central occlusion position for the denture.

The base 10 and the upper link 20 have apertured plates 35, 36, removably secured thereto by thumb screws 37, for receiving the blocks and the dentures indicated in dotted lines in Fig. 2.

The operation of my improved articulator is as follows:—

Blocks of plaster, such as indicated in dotted lines in Fig. 2, are set on the upper and lower articulator plates to receive the upper and lower trial plates of the denture, the articulator plates being secured to the base and upper link of the articulator by the thumb screws. The incisor guide pin is then set to properly position the denture in conformity with the human jaw position, the setting screws being in retracted position to permit central occlusion of the denture, although, if desired, these setting screws may be adjusted to provide right-lateral, left-lateral or protruding occlusion, in accordance with the patient's human jaw formation.

A backward movement of the incisor guide pin on the inclined guide surface will cause the upper plate to move backward and upward; a side movement of the guide pin will cause the upper plate to swing on its pivot at the rear of the cross bar, and will also cause a lateral, bodily shift of the upper plate; and a rotative or oscillating movement of the guide pin on the guide surface will cause the upper plate to move so as to exactly simulate the average movements of the human jaw. This relative plate movement thus prepares the denture so that the final ultimate adjustment in the mouth of the patient is greatly curtailed.

While I have described and illustrated a specific embodiment of my invention, I desire it to be understood that I do not limit myself to this construction, as it is evident that the application of the invention may be varied in many ways within the scope of the following claims.

I claim:

1. In a dental articulator, a base, a jaw-receiving member on said base, bearing standards on said base, a cross bar having its ends pivotally and slidably mounted in said bearing standards, a rearwardly positioned bearing standard on said base, a pivot pin mounted in said rearwardly positioned standard perpendicularly disposed to and secured to said cross bar, a movable element mounted on said cross bar, and a jaw-receiving element on said movable element.

2. In a dental articulator, a base, a jaw-receiving member on said base, bearing standards on said base, slots in said bearing standards, a cross bar having its ends pivotally and slidably mounted in said slots, a rearwardly positioned bearing standard on said base, a pivot pin mounted in said rearwardly-positioned standard perpendicularly-disposed to and secured to said cross bar, a movable element mounted on said cross bar, and a jaw-receiving element on said movable element.

3. In a dental articulator, a base, a jaw-receiving member on said base, bearing standards on said base, slots in said bearing standards, a cross bar pivotally and slidably mounted in said slots, setting screws mounted adjacent said slots for adjustably initially setting said cross bar in said slots, a rearwardly-positioned bearing standard on said base, a pivot pin mounted in said positioned standard perpendicularly disposed to and secured to said cross bar, a movable element mounted on said cross bar, and a jaw-receiving element on said movable element.

4. In a dental articulator, a base, a jaw-receiving member on said base, bearing standards on said base having guide slots, a cross bar having its ends slidably and rotatably mounted in said guide slots, a movable element mounted on said cross bar, a jaw-receiving member on said movable element, and means for pivoting said cross bar about a point to the rear of said bearing standards.

5. In a dental articulator, a base, a jaw-receiving member on said base, bearing standards on said base, slots in said bearing standards, a cross bar rotatably and slidably mounted in said slots, a movable element mounted on said cross bar, a jaw-receiving

member in said movable element, an additional bearing standard on said base in rear of said bearing standards, a recess therein, and a pivot pin mounted in said recess and secured to said cross bar.

6. In a dental articulator, a base, a jaw-receiving member on said base, bearing standards on said base, slots in said bearing standards, a cross bar rotatably and slidably mounted in said slots, setting screws adjacent said slots for positioning said cross bar in said slots, a movable element mounted on said cross bar, a jaw-receiving member on said movable element, an additional bearing standard on said base in rear of said bearing standards, a tapered recess therein, and a pivot pin mounted in said tapered recess and secured to said cross bar.

7. In a dental articulator, a base, a jaw-receiving member on said base, bearing standards on said base, slots in said bearing standards, a cross bar rotatably and slidably mounted in said slots, a movable element, an additional bearing standard on said base in rear of said bearing arms, a recess therein, a pivot pin mounted in said recess and secured to said cross bar, a guide block on said base having an inclined guide surface, and an incisor guide pin adjustably mounted on said movable element and adapted to contact with said guide surfaces.

8. In a dental articulator, a base, a jaw-receiving member on said base, bearing standards on said base, slots in said bearing standards, a cross bar rotatably and slidably mounted in said slots, setting screws adjacent said slots for positioning said cross bar in said slots, a movable element mounted on said cross bar, a jaw-receiving member in said movable element, an additional bearing standard on said base in rear of said bearing arms, a tapered recess therein, a pivot pin mounted in said tapered recess and secured to said cross bar, a guide block on said base having an inclined guide surface, and an incisor guide pin adjustably mounted on said movable element and adapted to contact with said guide surface.

In testimony whereof I affix my signature.

JOSEPH A. STREKER.