July 26, 1960 L. G. COBLE 2,946,124

SWALLOWING COORDINATOR

Filed March 8, 1957

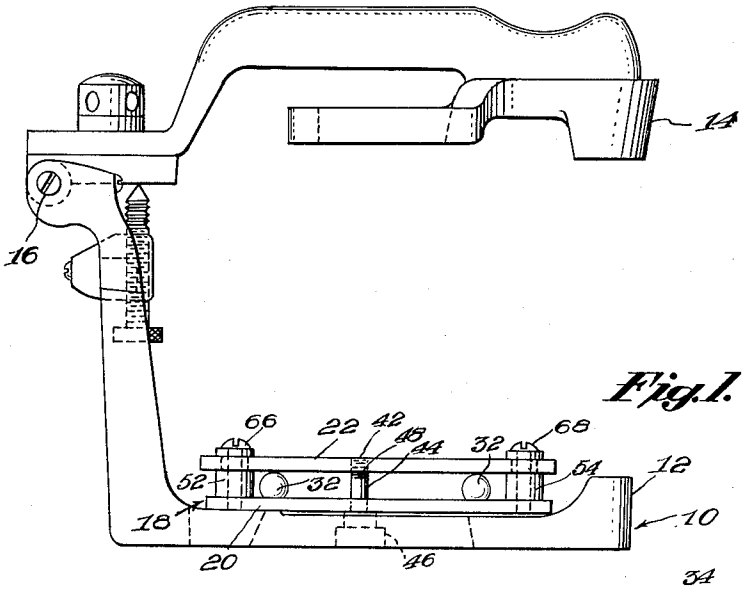


Fig. 1.

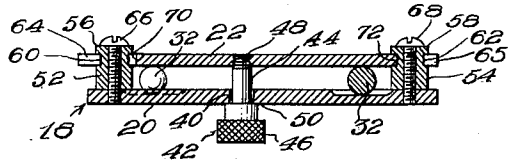


Fig. 2.

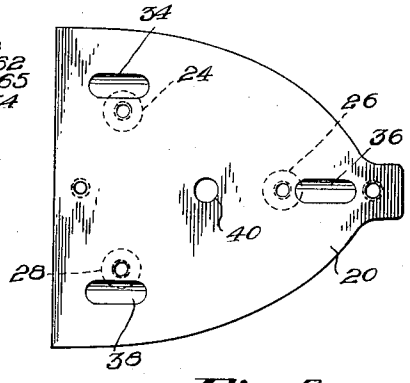


Fig. 3.

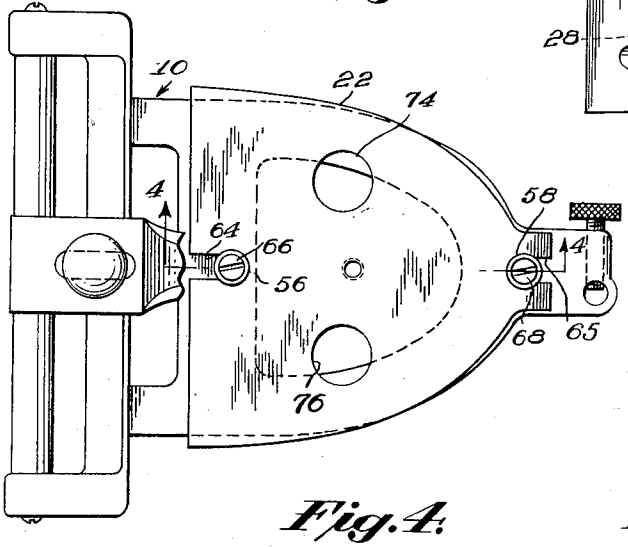


Fig. 4.

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SWALLOWING COORDINATOR

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6 Claims. (Cl. 32—32)

This invention relates to a device used in the construction of artificial dentures, and more particularly to a device which may be used to perfect an occlusal balance when the patient's jaws are in swallowing position.

In the construction of artificial dentures many techniques have been developed to transfer to the artificial dentures the patient's natural mandibular movements. The use of an articulator to reproduce the natural mandibular movements is well known. As disclosed in my Patent No. 2,582,104, true centric position may be established by an intra oral tracer and balancer secured to the rims or base plates and placed in the patient's mouth, to trace a Gothic arch on a graph plate. The balancer may be used after the full dentures are processed to perfect occlusal balance and eliminate cuspal prematurities.

These existing techniques in the registration of jaw relations neglect one important factor. In swollowing it has been ascertained that the lower jaw moves in relation to the upper jaw approximately one half millimeter from centric position to an anterior position and one half millimeter from centric position to a posterior position. This slight movement of the lower jaw anterior and posterior to centric causes oral discomfort unless the occluded finished dentures move freely both anterior and posterior to centric position a distance of approximately one half millimeter.

A major object of this invention is to provide a swallowing coordinator for an articulator by which the dentures may be adjusted to insure this free anterior-posterior movement when perfecting an occlusal balance.

A further object of this invention is to provide a method of balancing dentures in an articulator by which the finished dentures may be easily adjusted to freely permit swallowing movement of the lower jaw anterior and posterior to centric position.

In attainment of these objectives, one important feature of this invention resides in the frictionless mounting of a denture supporting member for movement in the anterior-posterior direction on one of the pivoted bases of the articulator. Another important feature of this invention resides in the arrangement of a centering lock for positioning and retaining the moveable denture support in a central position in relation to the bases of the articulator with movement of the denture support being limited to a distance of approximately one half millimeter both anterior and posterior to the central position.

Other objects and advantages of the invention will become apparent from the following specification taken in connection with the accompanying drawings wherein:

Fig. 1 is a side elevation view of the preferred form of the swallowing coordinator or denture support as positioned on an articulator;

Fig. 2 is a sectional view taken on line 4—4 of Fig. 4;

Fig. 3 is a plan view of the base attaching member of the swallowing coordinator shown in Fig. 1;

Fig. 4 is a plan view of a swallowing coordinator or denture support as positioned on an articulator shown in Fig. 1.

Referring now to the drawings, an articulator is indicated generally at **10** having a lower base **12** and an upper base **14** conventionally pivoted at **16** to simulate mandibular movement of the jaws. Mounted on the lower base **12** is a swallowing coordinator **18** having a base attaching member **20** and a denture supporting member **22** conforming to the general shape of the lower base **12**. The base attaching member **20** is secured to the lower base **12** by screws **24**, **26** and **28**., Providing frictionless movement between the base attaching member and the denture supporting member are anti-friction bearings **32** which are disposed in grooves **34**, **36** and **38** in the base attaching member **20**. Passing through an opening **40** in approximately the center of the base attaching member is a centering lock **42**. This opening **40** is slightly elongated, allowing a clearance on either side of the body portion **44** of the centering lock. To center the denture supporting member in relation to the base attaching member, the centering lock is turned by its knurled head **46** to engage the threaded portion **48** in the denture supporting member, approximately in the center of the supporting member, until the shoulder **50** abuts the underside of the base attaching member **20**.

For the purposes of restraining the movement of the denture supporting member to an anterior-posterior direction when it is not locked in centric position, bushings **52** and **54** are positioned at either ends of the coordinator between the base attaching member and the denture supporting member. These bushings **52** and **54** are formed with heads **56** and **58** and neck portions **60** and **62**. The denture supporting member is formed at its ends with slots **64** and **65**, to receive the necks of the bushings which are retained within the slots by screws **66** and **68** extending through the bushings, and screw-threaded into the base attaching member **20**.

The ends **70** and **72** of the slots **64** and **65** are stops which engage the necks **60** and **62** of the bushings, and restrain the anterior-posterior movement of the denture supporting member.

When the centering lock is not holding the denture supporting member in true centric position, the denture supporting member can move on the anti-friction bearings approximately one half millimeter in an anterior direction and one half millimeter in a posterior direction since this is the amount of clearance between the necks of the bushings and the ends **70** and **72** of the slots when the denture support member is centered. Holes **74** and **76** formed in the denture supporting member receive plaster on the bottom of the lower denture to secure the lower denture in the coordinator.

In carrying out the invention, upper and lower base plates are constructed in the usual manner and true centric position may be established with the use of my intra oral tracer and balancer. With the centering lock locating the denture supporting member in its central position, the upper and lower dentures, fastened together in centric position, are respectively mounted by plaster of Paris on the upper base of the articulator and on the denture support of the swallowing coordinator. The centering lock is now released from engagement with the denture supporting member and this member is free to move approximately one half millimeter anterior to centric position and one half millimeter posterior to centric position.

To perfect the occlusal balance of the denture within this millimeter of movement anterior and posterior to centric, the upper denture is occluded with the lower denture and, if any movement occurs between these dentures, both upper and lower dentures are spot ground

until there is no longer any movement between them. Now the lower denture is moved approximately one half millimeter to posterior position and the same procedure is employed.

When no movement is discerned between the upper and lower dentures when occluded anterior and posterior to centric, the dentures may follow the maximum swallowing movement of the patient's jaws without frictional restraining.

Primarily, the method of obtaining a good occlusal relationship with artificial dentures is a simple one. After mounting the dentures in an articulator, the lower denture is freely supported for movement in an anterior-posterior direction and parallel to the occlusal plane. The upper and lower dentures are then spot ground until they can be closed to the same occlusal plane in all positions extending from one half millimeter anterior to centric and one half millimeter posterior to centric without causing relative movement in an anterior-posterior direction.

It can be readily seen that to establish this freedom of anterior-posterior movement accurately, there must be frictionless movement between the denture supporting member and the base attaching member, as the slightest movement must be capable of detection when working within such narrow limits. Hence the importance of the anti-friction bearings between the members.

The foregoing description is one embodiment of the invention and it will become apparent to those skilled in the art that various changes and modifications will be made therein without departing from the scope of the invention.

What I claim as my invention is:

1. In a dental articulator having upper and lower bases mounted for relative pivotal movement, a denture supporting device comprising a mounting member, a denture supporting member, means for attaching said mounting member to one of the bases, and anti-friction means supporting said denture supporting member on said mounting member for limited movement in a direction parallel to the plane of said denture supporting member and normal to the pivotal axis of the bases.

2. In a dental articulator having upper and lower bases mounted for relative pivotal movement, a denture supporting device comprising a mounting member, a denture supporting member, means supporting said denture supporting member on said mounting member for free movement along a path in a single direction parallel to the plane of said denture supporting member and normal to the pivotal axis of the bases, means for limiting relative movement of said members along said path, and means on said mounting member for centering said denture supporting member with respect to the ends of said path.

3. A dental articulator comprising upper and lower bases mounted for relative pivotal movement, a denture supporting member, and anti-friction means supporting said member on said lower base for limited movement in an anterior-posterior direction.

4. A denture support for attachment to one of the bases of a dental articulator comprising a base attaching member, a denture supporting member, anti-friction means between said members affording relative movement therebetween, and means constraining said denture supporting member for movement to a limited distance in an anterior-posterior direction.

5. A denture support for attachment to one of the bases of a dental articulator comprising a base attaching member, a denture supporting member, balls between said members affording frictionless relative movement therebetween, and means constraining said denture supporting member for movement to a limited distance in a single direction.

6. A denture support for attachment to one of the bases of a dental articulator comprising a base attaching member, a denture supporting member, anti-friction means between said base attaching member and said denture supporting member affording relative movement therebetween, means constraining said denture supporting member for movement to a limited distance in a single direction, and means for centering said denture supporting member in relation to said base attaching member.

References Cited in the file of this patent

UNITED STATES PATENTS

1,906,797	Lentz	May 2, 1933
2,106,125	Roebuck et al.	Jan. 18, 1938
2,592,288	Johnson	Apr. 8, 1952
2,621,407	Schlesinger	Dec. 16, 1952