March 13, 1962 H. WILKINSON 3,024,534

DENTAL ALIGNER

Filed Feb. 20, 1959

FIG. 1

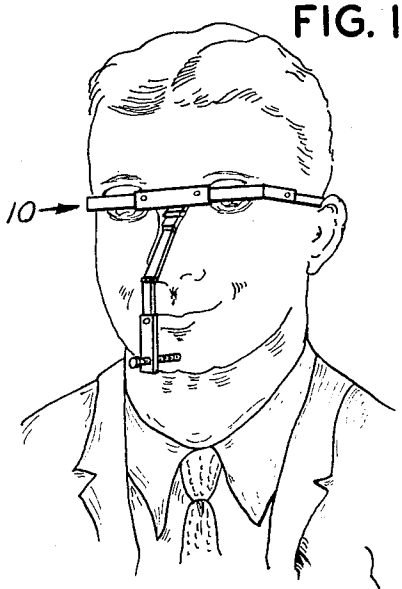


FIG. 3

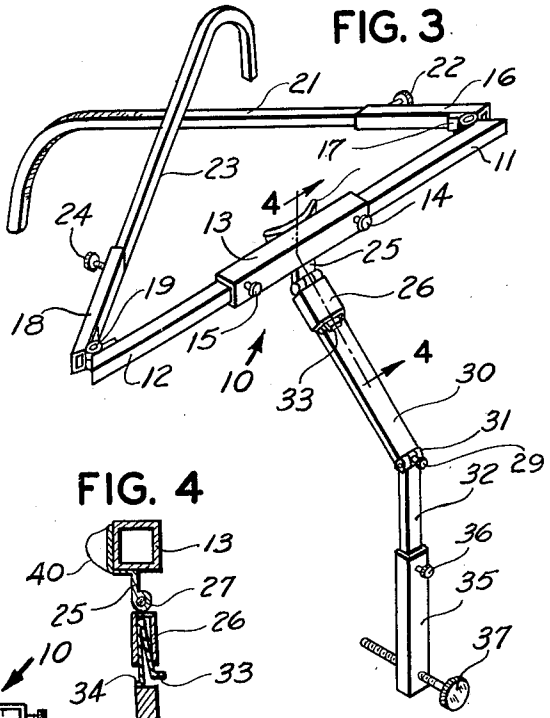


FIG. 4

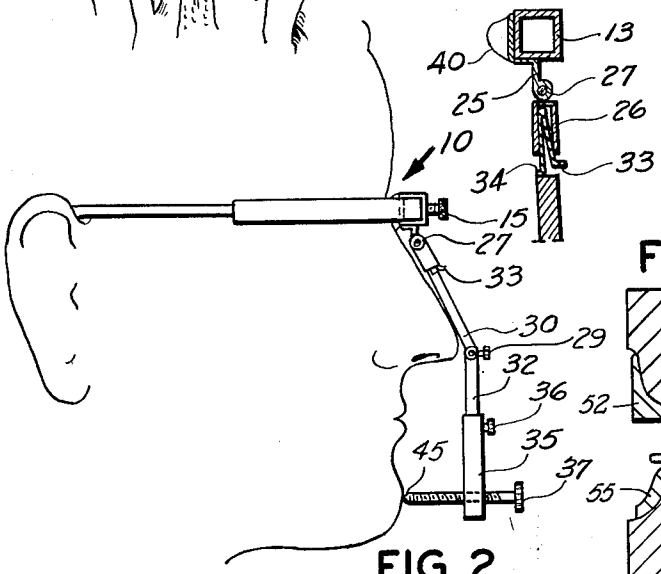
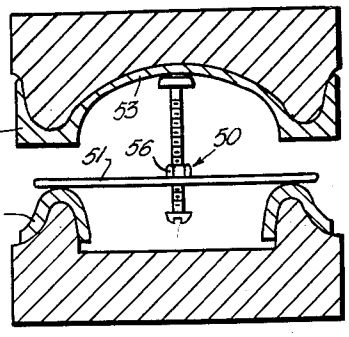


FIG. 2

FIG. 5



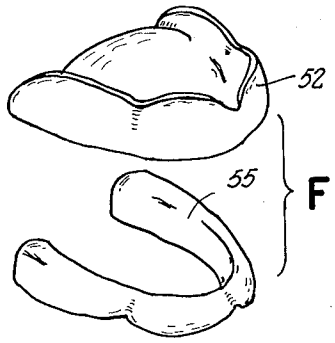


FIG. 6

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3,024,534
Patented Mar. 13, 1962

3,024,534

DENTAL ALIGNER

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Filed Feb. 20, 1959, Ser. No. 794,550
4 Claims. (Cl. 32—20)

This invention relates to dental aliners and more particularly to a dental aliner used in conjunction with an adapter for accurately locating the natural position of the lower jaw (mandible) at rest.

One of the objects of the present invention is to provide an improved dental aliner to be used in conjunction with an adapter to accurately locate the natural position of the mandible at rest.

Another object of the present invention is to provide a dental aliner which in conjunction with an adapter locates accurately the condyle point of the mandible through muscular control of height, width and distal depth.

Another object of the present invention is to provide a dental aliner which accurately indicates muscular movement of a patient's jaws with respect to the converged intersection of the vertical and horizontal planes.

And still another object of the present invention is to provide a dental aliner which indicates the amplitude of the closure of a patient substantially perpendicular to the axis of the patient's jaw.

And another object of the present invention is to provide a dental aliner which promotes the most exacting dimensional reproduction of normal articular position for a particular patient.

Another object of the present invention is to provide a dental aliner which is simple and economical of construction, easily adjusted, efficient in operation and which will not readily get out of order.

And still another object of the present invention is to indicate on a patient's chin the free space of occlusion.

Other objects of the present invention will become apparent in part and be pointed out in part in the following specification and claims:

In the past converged closure of occlusion apparatus were either strapped over the head or fastened to the base of the head. In either event an artificial condyle point was built into the apparatus in the form of a pivoting point on either side of the head. The device provided for a pivoting bracket, pivoted at the condyle point, to be provided with a chin rest. Thus creating distortion in the position of the lower jaw at rest. Other prior art devices were face meters measuring distances from forehead to eyes, to lips to chin strap. Again creating distortion in the position of the lower jaw at rest. The present dental aliner provides the simple expedient of an adjustable frame provided with an adjustable vertical arm which rests upon the nose and is provided with a horizontal pointer which marks a single dot upon the patients chin indicating the converged point of the jaws at rest. Thus allowing for the establishment of the point indicating the converged point of closed occlusion.

Like reference characters refer to like parts in the following drawings, in which;

FIGURE 1 is a perspective view of the new and improved dental aliner fitted upon a dental patient.

FIGURE 2 is a side elevational view of FIGURE 1.

FIGURE 3 is an enlarged perspective view of the new and improved dental aliner.

FIGURE 4 is a transverse cross sectional view taken along line 4—4 of FIGURE 3.

FIGURE 5 is a transverse cross sectional view through cast holding blocks, the upper wax trial plate, lower wax rim and adapter.

FIGURE 6 is a perspective view of an upper wax trial plate and a lower wax trial rim.

Attention is directed to the drawings wherein is illustrated the new and improved dental aliner generally indicated by reference character 10. The dental aliner generally consists of an adjustable frame provided with a nose piece.

The adjustable frame consists of a left front bar 11 and a right front bar 12, both substantially rectangular in cross section. A hollow sleeve 13 is adapted to adjustably receive left front bar 11 and right front bar 12 which are slidably held within said hollow sleeve 13. Thumb screws 14, 15 rotatively mounted in hollow sleeve 13 secure left front bar 11 and right front bar 12, respectively, in adjusted position within hollow sleeve 13.

A left side hollow temple 16 is pivotally connected to left front bar 11 by means of a hinge 17. Similarly, a right side hollow temple 18 is pivotally connected to right front bar 12 by means of a hinge 19. A left side temple extension 21, substantially rectangular in cross section, is slidably mounted within left side hollow temple 16 for purposes of adjustment. A thumb screw 22 rotatively mounted in left side hollow temple 16 secures left side temple extension 21 in adjusted position. Similarly, a right side temple extension 23, is slidably mounted within right side hollow temple 18 for purposes of adjustment. A thumb screw 24 rotatively mounted in right side hollow temple 18 secures right side temple extension 23 in adjusted position.

A hinge is located at the center of hollow sleeve 13. The hinge consists of a bracket 25 secured to hollow sleeve 13 as by welding, brazing, soldering or the like and a hollow casing 26 united by means of pintle 27.

A nose arm 30 is pivotally connected at 31 to a vertical arm 32. A spring clip 33 is secured to nose arm 30 at 34 and is housed in hollow casing 26, to removably, secure nose arm 30 and vertical arm 32 to hollow casing 26. A thumb screw 29 locks vertical arm 32 in selected position in relation to nose arm 30.

A vertical extension sleeve 35 is slidably mounted upon vertical arm 32. A thumb screw 36 rotatively mounted in vertical extension sleeve 35 secures said sleeve 35 in adjusted position along vertical arm 32. A horizontal pointer 37 in the form of a thumb operated screw is rotatively mounted in vertical extension sleeve 35.

In operation temple extensions 21, 23 are hung on the ears of a dental patient, in the same manner in which eye glasses are worn. Nose rest 40 secured to hollow sleeve 13 rests upon the bridge of the nose of the dental patient. Nose arm 30 rests upon the dental patient's nose with vertical arm 32 freely suspended in front of the dental patient's chin. Thumb screw 29 secures vertical arm 32 in selected position.

Left side temple extension 21 is adjusted in left side hollow temple 16. Similarly, right side temple extension 23 is adjusted in right side hollow temple 18. Left front bar 11 and right front bar 12 are slidably adjusted in hollow sleeve 13. All these adjustments are made to cause nose rest 40 to be properly positioned on the dental patients nose with nose arm 30 resting upon the center of the dental patient's nose, so that horizontal pointer 37 is directly in the center of the dental patient's chin. Vertical extension sleeve 35 is then adjusted upon vertical arm 32 to adjust horizontal pointer 37 vertically in relation to the dental patient's chin.

FIGURES 1 and illustrates the head of a dental patient provided with the new and improved dental aliner. The jaw of the patient is at rest with the teeth extracted and the gums ready to receive a pair of artificial dentures.

At this time the dentist indicates, by means of a dot, the position of horizontal pointer 37 against the patient's chin. Approximately, one mm. below that point in a vertical line a second dot is placed on the chin. This

second dot indicates the coverged point of closed occlusion. It is the estimated one half depth of a cusp.

An upper wax trial plate 52 is prepared prior to initial insertion into the oral cavity. It is prepared to show the anterior arch form, the incisal length and perpendicular median line.

An adapter, generally indicated by reference character 50, made in accordance with United States Patent No. 2,552,829 which issued on May 15, 1951, to Harry Wilkinson is then attached to the vault 53 in upper wax trial plate 52.

A lower wax trial rim 55 is prepared prior to initial insertion into the oral cavity. It is prepared to result in a horizontal plane freely spaced from the upper wax trial plate 52.

The upper wax trial plate 52 with adapter 50 attached and the lower wax trial rim 55 are then placed in the oral cavity with the balancing bar 51 of the adapter 50 resting upon the lower wax trial rim 55. The patient opens and closes the mouth at will. During this mouth opening and closing procedure the adapter stop 56 is adjusted so that the horizontal pointer 37 coincides with the lower mark previously made on the patient's chin indicating the converged point of closed occlusion. The patient holds this jaw position while the dentist inserts a soft mix of plaster between the upper wax trial plate 52 and the lower wax trial rim 55 to seal them together.

The unit mass is then removed from the oral cavity thus providing the articular record, for placement on the holding casts. The holding casts are then placed in an articulator. Thus providing the mechanical mounting of articulation.

The present dental aliner 10 permits the measurement of one half the depth of a cusp, appriximately 1 mm., above absolute rest to the closed occlusal position of the mandible and without the slightest distortion of the facial features of the dental patient because the present dental aliner 10 exerts no force on the chin or face muscles. All prior art dental aliners had a pressure point usually the chin or an assumed condyle point. In the use of the present invention the dentist takes a measurement from the patient's condyle point to the alae of the nose. This measurement is used to set the cast in the upper jaw of the articulator. Thus transferring the patient's condyle point to the dentures through the articulator. A more accurate measurement is provided.

The point indicated on the patient's chin by the horizontal pointer 37 confines the mandible to a single point of rest which can thereafter be reestablished. Thereafter this single point will let the dentist know whether the mandible is vertically open, vertically closed, moved sidewise left or right, or moved protrusively forward or retrusively back. These last two movements are indicated by the nose arm 30 moving away from the nose or the chin moving away from the end 45 of horizontal pointer 37.

Having illustrated and described one embodiment of the present invention, by way of example, but realizing that structural changes could be made and other examples given without departing from either the spirit or scope of the present invention, what I claim is:

1. A dental aliner to locate the mandible at rest and to locate one half the estimated depth of a cusp, consisting of a frame horizontally adjustable, left hand and right hand temples pivotally and adjustably connected to opposite ends of said frame, a nose arm, means pivotally mounting said nose arm on said frame, a vertical arm pivotally connected to said nose arm, a vertical extension sleeve adjustably mounted upon said vertical arm and a horizontal pointer rotatively mounted in the lower end of said vertical extension sleeve.

2. A dental aliner consisting of a left front bar and a right front bar, a hollow sleeve, means adjustably securing said left front bar and said right front bar in opposite ends of said hollow sleeve, a left side hollow temple, a first hinge pivotally connecting said left side hollow temple to the end of said left front bar, a right side hollow temple, a second hinge pivotally connecting said right side hollow temple to the end of said right front bar, a left side temple extension, means adjustably securing said left side temple extension in said left side hollow temple, a right side temple extension, means adjustably securing said right side temple extension in said right side hollow temple, a hollow casing pivotally mounted to said hollow sleeve at the geometric center of said hollow sleeve, a nose arm, a vertical arm pivotally connected to said nose arm, a spring clip, fixed to said nose arm, adapted to be removably secured to said hollow casing, a vertical extension sleeve, means adjustably securing said vertical extension sleeve to said vertical arm and a horizontal pointer rotatively mounted in said vertical extension sleeve to repeatedly locate a muscularly converged position on the chin of a dental patient.

3. In a dental aliner indicating the position of the mandible at rest, the combination of means adapted to be used in connection with a patient's head of a horizontal frame provided with a nose rest, a left hand temple and a right hand temple pivotally mounted on opposite ends of said frame, a nose arm, a first means pivotally mounting said nose arm to the geometric center of said frame, and a second means removably securing said nose arm to said first means, a vertical arm, means adjustably connecting said vertical arm to said nose arm, a vertical extension sleeve, means adjustably lengthening said vertical arm and a horizontal pointer adjustably mounted in said vertical arm for indicating the relative movement of a patient's jaw from the position of the mandible at rest to a position one half the estimated depth of a cusp.

4. In a dental aliner, the combination of means adapted to be used in connection with a patient's head of a horizontal frame provided with a nose rest adapted to rest upon the bridge of the nose of a patient, a left hand temple and a right hand temple pivotally mounted on opposite ends of said frame and adapted to engage the ears of a patient, a nose arm, means pivotally mounting said nose arm to the horizontal center of said frame and to rest upon the nose of a patient, a vertical arm, means adjustably connecting said vertical arm to said nose arm, a vertical extension sleeve, a horizontal pointer adjustably mounted in said vertical extension sleeve, means adjustably lengthening said vertical arm to vertically position said horizontal pointer in front of the chin of a patient, said horizontal pointed adjustably mounted to lightly touch the chin of a patient to indicate the position of the lower jaw of a patient at rest and in conjunction with a dental aliner indicate the relative movement of a patient's jaw from a position of rest to a position of closed occlusion one half the estimated depth of a cusp, above the point of inertia, at rest.

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