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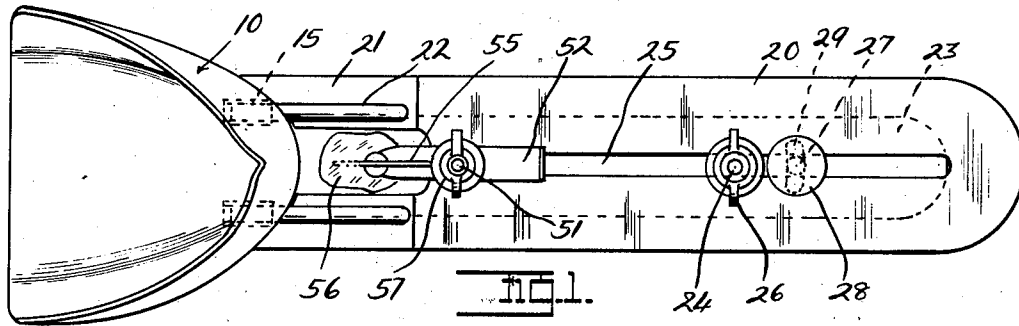
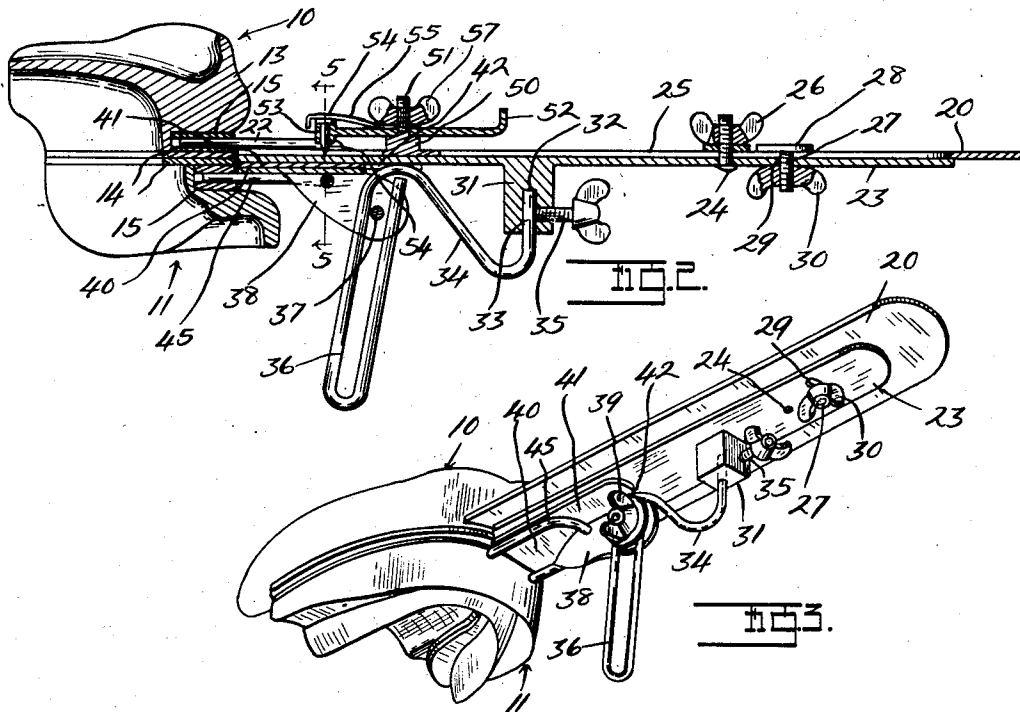
G. J. KELLER

2,001,963

TRUE BITE ATTACHMENT

Filed Oct. 10, 1932

2 Sheets-Sheet 1



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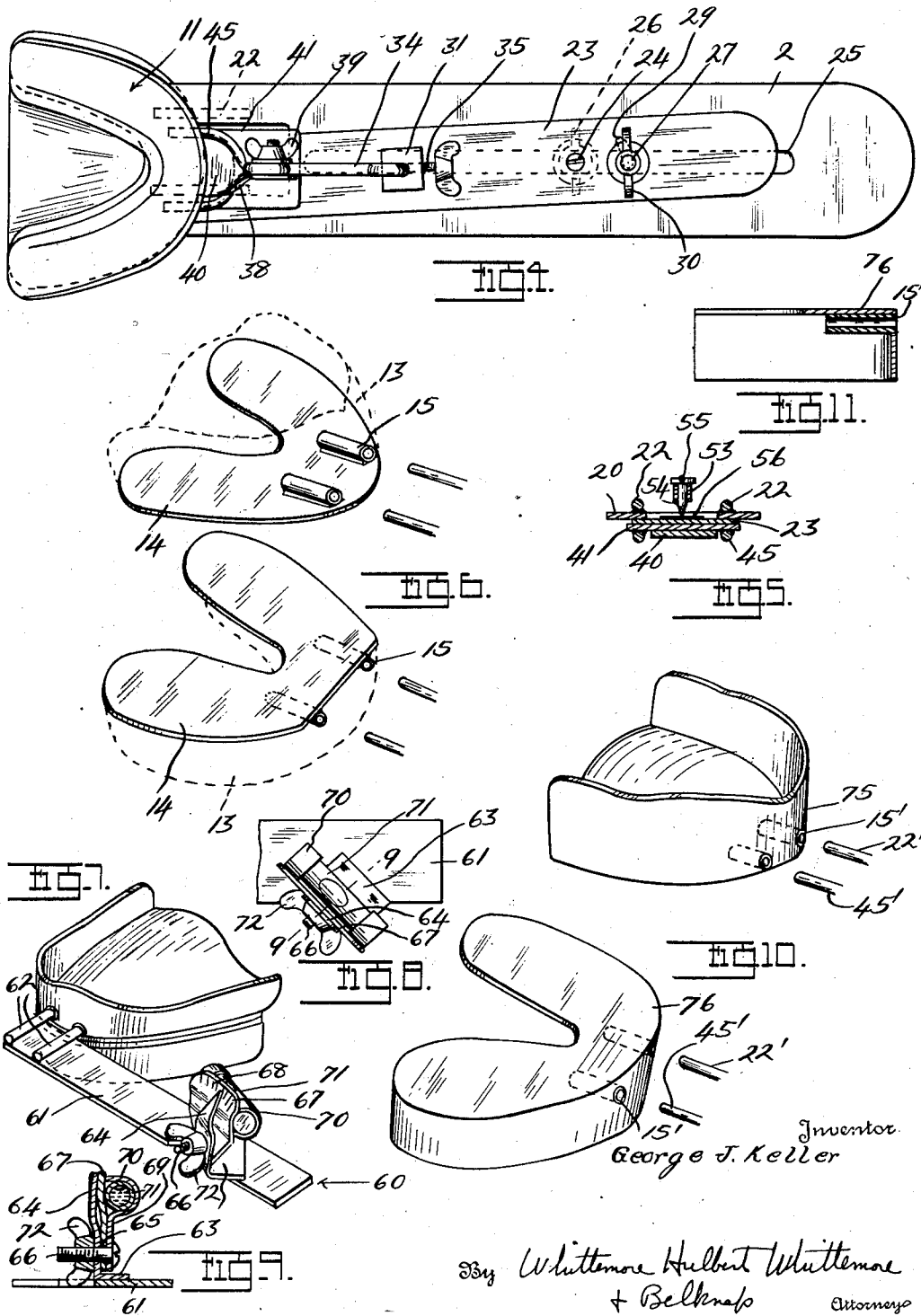
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UNITED STATES PATENT OFFICE

2,001,963

TRUE BITE ATTACHMENT

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3 Claims. (Cl. 32—19)

This invention relates to a device adapted for use in determining the proper shut or bite of the jaws.

One of the primary objects of this invention is to provide a device of the above mentioned character which will include an attachment which may be readily secured to impression trays, bite blocks, or the like, while they are in position in a patient's mouth.

The invention further contemplates the provision of an attachment of the above mentioned character, the movable parts of which will have flat inter-engaging surfaces whereby the movable parts of the attachment may move readily with reference to each other.

The invention further contemplates the provision of an attachment of the above mentioned character which may be readily secured to bite blocks or the like even though these bite blocks are somewhat out of alignment with each other.

Still further the invention contemplates the provision of an attachment of the above mentioned character which will include means for forming a permanent record of the protruded bite of the patient.

The invention also contemplates the provision of means which will make possible the positioning of bite blocks or the like in an articulator in the same angular position which the blocks assume when they are in the mouth of a patient.

Numerous other objects and advantages of this invention will become more apparent as the following description proceeds, particularly when reference is had to the accompanying drawings wherein like reference characters designate corresponding parts throughout all views and wherein:

Fig. 1 is a plan view of an attachment constructed in accordance with the teachings of this invention showing this attachment secured to a pair of bite blocks;

Fig. 2 is a longitudinal sectional view through the structure shown in Fig. 1;

Fig. 3 is a perspective view of the structure shown in Fig. 1;

Fig. 4 is a view similar to Fig. 1 showing the positions assumed by the several parts of the attachment when the bite blocks are out of alignment with each other;

Fig. 5 is a sectional view taken substantially on the line 5—5 of Fig. 2;

Fig. 6 is a perspective view of the bite blocks adapted to be utilized with the attachment;

Fig. 7 is a perspective view of a second attach-

ment constructed in accordance with the teachings of this invention;

Fig. 8 is a plan view of a portion of the structure shown in Fig. 7;

Fig. 9 is a sectional view taken substantially on the line 9—9 of Fig. 8;

Fig. 10 is a view similar to Fig. 6 showing impression trays to which the attachment may be secured; and

Fig. 11 is a sectional view taken through one of the trays shown in Fig. 7.

Referring then particularly to the drawings, the numerals 10 and 11 designate upper and lower bite blocks respectively. Each bite block is, in accordance with the usual practice, formed with a body portion 13 of wax or the like, and the upper face of the upper bite block is shaped to conform to the roof of the patient's mouth, while the lower face of the lower bite block is shaped to conform to the bottom of the patient's mouth.

Fixed to the adjacent faces of the wax bodies 13 are plates 14, these plates being substantially U-shaped in elevation, as illustrated in Fig. 6 of the drawings. Fixed to the remote faces of the plates 14 and thus imbedded in the wax bodies 13 of the bite blocks, are tubular sockets 15, there being two sockets fixed to each plate 14 and these sockets being fixed to the plates adjacent the forward ends thereof. It constitutes a feature of this invention that with the sockets 15 secured to the remote faces of the plates 14 in the manner illustrated, the plates 14 provide flat inter-engaging surfaces for the bite blocks whereby the bite blocks may move freely relative to each other.

The numeral 20 designates a flat elongated plate or arm having its one end bifurcated to form the furcations 21. Fixed to the upper face of these furcations are prongs 22 which project beyond the bifurcated end of the arm for engagement in the sockets 15 of the upper bite block 10.

The numeral 23 designates a second plate or arm adapted to lie flush against the under face of the arm 20 for longitudinal and pivotal movement with respect thereto. To provide for this movement of the plate 23 with reference to the plate 20, there is fixed to the plate 23 a stud 24 which extends upwardly through a slot 25 formed in the plate 20. This stud is threaded to receive a wing nut 26 whereby the plates 20 and 23 may be locked in any adjusted position with respect to each other.

For the purpose of more firmly securing the plates 20 and 23 against movement with respect

to each other, there is provided a second stud 27 mounted in the slot 25 for movement longitudinally thereof. This stud is provided with an enlarged head 28 which engages the upper face of the plate 20, and the shank of this stud extends through an arcuate slot 29 formed in the lower plate 23 adjacent the point of attachment of stud 24 to this plate. A wing nut 30 threadedly engages the stud 27 for clamping engagement with the under face of the plate 23, it being apparent that after the plates 20 and 23 have been moved pivotally and longitudinally with respect to each other, the nut 26 may first be tightened and the nut 30 then tightened to secure the plates in fixed position with respect to each other. The slot 29 in the plate 23 permits limited pivotal movement of this plate with reference to the plate 20 and about the axis of the shank 24.

Fixed to the under face of the plate 23 is a boss 31 bored as at 32 to rotatably receive the end 33 of a rod or arm 34. A set screw 35 threaded in the boss is adapted to impinge the end of the arm 34 to lock this arm in any position of rotative adjustment with reference to the boss.

The arm 34 is bent to form an elongated slot 36 disposed below the plate 23. Slidably mounted in the slot 36 is a stud 37 which is fixed to a plate 38, this plate being adapted to lie flush against the portion of the arm 34 which defines the slot 36. A wing nut 39 on the stud 37 provides means for locking the plate against pivotal and sliding movement with reference to the slotted portion of the arm 34.

It will be noted that the portion of the plate 38 to which the stud 37 is secured is substantially normal to the plane of the arm 23. This plate is, however, twisted intermediate its ends to provide a portion 40 adapted to assume a position parallel to the plate 23, and fixed to the portion 40 of plate 38 is a second plate 41 which is adapted to lie flush against the under surface of the arm 23. The plate 41 is provided with a slot 42 which registers with the adjacent portion of the arm 34 whereby the plates 40 and 41 may be adjusted longitudinally of the slot 36, as will be readily apparent.

Fixed to the plate 41 are prongs 45, these prongs being conveniently formed of a single strip of heavy wire which passes through the plate 38 adjacent the twist therein. These prongs project forwardly beyond the ends of the plates 40 and 41 for insertion into the sockets 15 of the bottom bite block 11.

Fixed to the upper plate 20 adjacent the base of the furcations therein is a boss 50 which carries an upwardly extending threaded stud 51. Rotatably mounted on this stud is a small arm 52 having in its forward end a socket 53. A pin 54 is loosely mounted in this socket and is adapted to engage that portion of the upper face of plate 23 which lies between the furcations 21. A spring 55 suitably anchored on the arm 52 engages the head of the pin 54 to urge the pointed end thereof into contact with a layer 56 of wax on the adjacent portion of the upper face of plate 23. A wing nut 57 is provided for locking the arm 52 against rotative movement on its stud 51.

The numeral 60 designates generally a second attachment adapted for use with the attachment above described. This second attachment is shown more clearly in Figs. 7 to 9, inclusive, of the drawings and comprises an arm 61 having at one end thereof laterally extending prongs 62 adapted to be inserted in the openings 15 of the lower bite member or block.

Fixed to the other end of arm 61 at an inclination to the longitudinal axis thereof is a plate 63 which extends upwardly in a direction normal to the plane of the arm 60. This plate terminates at its free end in a pointed portion 64 for a purpose which will hereinafter be more fully brought out.

Plate 63 is apertured as at 65, and passing through the aperture therein is a threaded stud 66 which carries a fan-shaped plate 67. This plate lies at one side of the pointer 64 and is provided with indicia 68 which cooperates with the pointer in the manner clearly illustrated in Fig. 7 of the drawings.

A second plate 69 is fixed to the rear face of plate 67 and this plate has at its upper end straps 70 which support a spirit level 71. A wing nut 72 is threaded on the stud 66, the arrangement being such that rotation of this wing nut may be utilized to not only rock the plate 67 with reference to the pointer, but may also be utilized for clamping this plate against movement with reference to the pointer.

In using the two attachments above described, the bite blocks are placed in the mouth of the patient, and after the bite blocks are properly in position, the prongs carried by the arms 20 and 23 may then be inserted in the sockets 15 to secure the attachment to the bite blocks. Lateral movement of the bite blocks relative to each other is provided by the pivotal connection between plates 20 and 23, while vertical movement of the bite blocks relative to each other is provided by the pivotal and sliding connection of plate 38 to arm 34. The pivotal connection of arm 34 to boss 31 and thus to plate 23 provides that the prongs 45 may be inserted in the sockets 15 of the lower bite block even if the lower bite block is slightly out of alignment with respect to the upper bite block. Thus, as illustrated in Fig. 4 of the drawings, the plate 41 may be moved relative to the arm 23 so that the prongs 45 will be parallel with the prongs 22 even though they may be slightly out of alignment with respect to these prongs.

Further, the movement of the boss to obtain the protruded bite of the patient is permitted by virtue of the slidable connection between plates 20 and 23. It will be apparent that with the attachment secured to the bite blocks, the patient may be advised to so move his jaws that the stud 24 will move longitudinally in the slot 25. This is of particular advantage since it provides a visible means by which the dentist may determine whether or not the patient is imparting the proper movement to his jaws and provides further, a visible means which will aid the patient in imparting the proper movement to his jaws.

It constitutes a feature also of this invention to provide means for recording the extent of the protruded bite of the patient. During the initial connection of the attachment to the bite blocks, the arm 52 may be swung to the position shown in dotted lines in Fig. 1 of the drawings. With the arm in this position, a layer of wax, as designated by the reference character 56, may be placed on the portion of the arm 23 which is exposed between the furcations 21. After the device is attached to the bite blocks, the arm may be swung to the position shown in full lines in Fig. 1 of the drawings with the point of the pin 54 bearing on the layer of wax. If now, the patient so moves his jaws as to move the arm 23 longitudinally relative to the arm 20, the extent of relative movement of these two arms

will be graphically indicated by the tracing of a line by the pin 54 on the wax layer 56. After the extent of the protruded and lateral bite has been determined, the plates may be secured against movement with respect to each other by the wing nuts 26 and 30.

The obtaining of a graph of the protruded bite of the patient is of particular utility when the bite blocks are transferred to the articulator in accordance with the usual practice. The bite blocks may be placed in the articulator with their forward edges in vertical alignment with each other. The articulator may then be actuated to move the lower bite block forwardly with reference to the upper bite block a distance equal to that indicated by the graph traced on the wax layer 56. The wax body of the upper bite block may then be built forwardly sufficiently so that teeth imbedded in the upper bite block will be set end to end, upper and lower anteriors, on bite blocks in protruded position. By thus obtaining an accurate measurement of the protruded bite of the patient, the teeth may be so located in the upper and lower plates which are made from the impressions formed that relative movement of the teeth incident to the forward and backward movement of the patient's jaws with reference to each other will not be hindered.

It is customary, when utilizing the attachment shown in Figs. 1 to 5, inclusive, of the drawings, to hold this attachment in such a manner that the arms 20 and 23 lie in a plane substantially parallel to a line extending from the exterior auditory meatus to the wing of the nose. When the bite blocks or members are transferred to an articulator, it is important that these bite blocks be placed in the articulator in the same position with reference to the horizontal that they assume when they are in the patient's mouth. The attachment shown in Figs. 7 to 9, inclusive, is therefore provided for facilitating this proper positioning of the bite blocks in the articulator.

In using this attachment, after the proper positioning of the bite blocks with reference to each other has been obtained by the use of the attachment shown in Figs. 1 to 5, inclusive, of the drawings, or in other words, after the bite blocks are so positioned with reference to each other as to indicate the proper bite of the patient, these blocks are removed from the mouth of the patient and secured to each other in this position. This may conveniently be accomplished by applying a quantity of wax or the like to the meeting edges of the two blocks.

The bite blocks are then replaced in the mouth of the patient, and the attachment 60 is secured to the upper bite block in the manner illustrated in Fig. 7 of the drawings. The bite blocks are then adjusted within the mouth of the patient until the arm 61 assumes a position parallel to a line extended from the exterior auditory meatus to the wing of the nose of the patient. With the bite blocks and arm 61 in this position, the plate 67 is rocked with reference to the pointer 64 until the spirit level assumes a horizontal position, as indicated by the air bubble therein. The plate 67 may then be locked against movement with respect to the pointer 64 and a notation made as to the position of the pointer with reference to the graduations 68.

It will be apparent that when the bite blocks are placed in an articulator, the attachment 60 may be secured to the upper bite block and the plate 67 may be set to the position previously

noted and indicated by the position of the pointer 64 with reference to the graduations 68. The articulator may then be adjusted to so position the bite blocks that the spirit level will assume a horizontal position, thus indicating that the bite blocks are in the articulator in the same position that they assumed in the patient's mouth.

It will be noted that the plates 14 as well as the arms 20 and 23 are so formed that the moving parts of the attachment slide relative to each other on smooth unobstructed surfaces. Thus the parts of the attachment may readily follow the movement of the patient's jaws to accurately obtain the relative positions of the upper and lower bite blocks.

In Figs. 10 and 11 of the drawings a slightly modified form of construction is disclosed in which trays 75 and 76 are substituted for the bite blocks 10 and 11. These trays are of usual construction except that they are provided with sockets 15' for receiving the prongs 22' and 45'. As in the first described form of construction, it will be noted that the sockets 15' are so associated with the trays that the engaging surfaces of the trays are entirely smooth whereby the trays may move freely relative to each other when they are in the patient's mouth.

While the invention has been described with some detail, it is to be understood that the description is for the purposes of illustration only and is not definitive of the limits of the inventive idea. The right is reserved to make such changes in the details of construction and arrangement of parts as will fall within the purview of the attached claims.

What I claim as my invention is:

1. In a device of the character described, an arm having prongs projecting from one end thereof, a second arm pivotally secured to said first mentioned arm, a plate pivotally carried by said second arm for movement into parallelism with said first mentioned arm irrespective of the angular movement of said second mentioned arm with reference to said first mentioned arm, and prongs carried by said plate and projecting beyond the end thereof.

2. In a device of the character described, an arm, prongs fixed to said arm and projecting beyond one end thereof, a second arm connected to said first mentioned arm for longitudinal and pivotal movement with respect thereto, a boss depending from said second mentioned arm, a third arm rotatably carried by said boss, a plate adjustably carried by said third mentioned arm, and prongs fixed to said plate and adapted to assume a position parallel to but out of alignment with said first mentioned prongs.

3. In a device of the character described, upper and lower arms adapted to be respectively secured to upper and lower bite blocks, means connecting said arms for longitudinal and pivotal movement, a boss carried by and depending from said lower arm, a third arm having an end portion rotatably mounted in a bore in said boss, said third arm being provided with a portion defining a substantially vertical slot below said lower arm, a member mounted for vertical movement in said slot and for pivotal movement with respect to said third arm, and a plate carried by said member and adapted to assume a position flush against the under face of said second mentioned arm adjacent one end thereof.

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