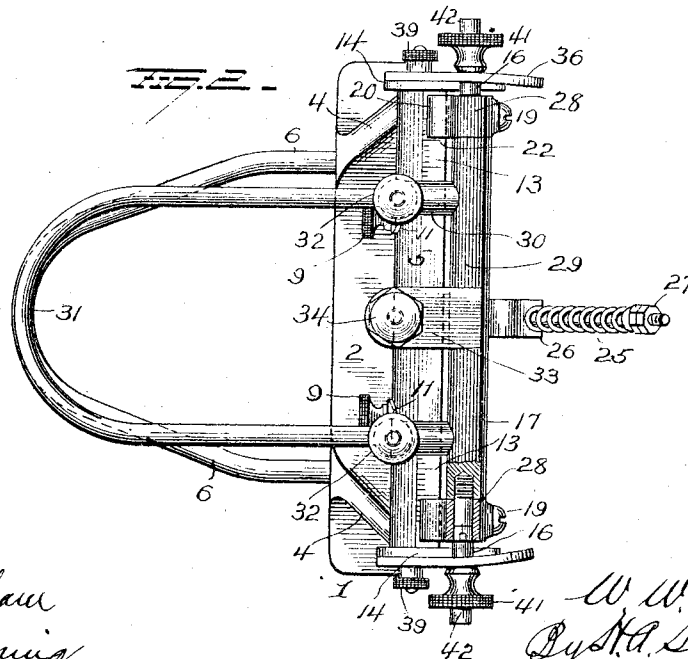
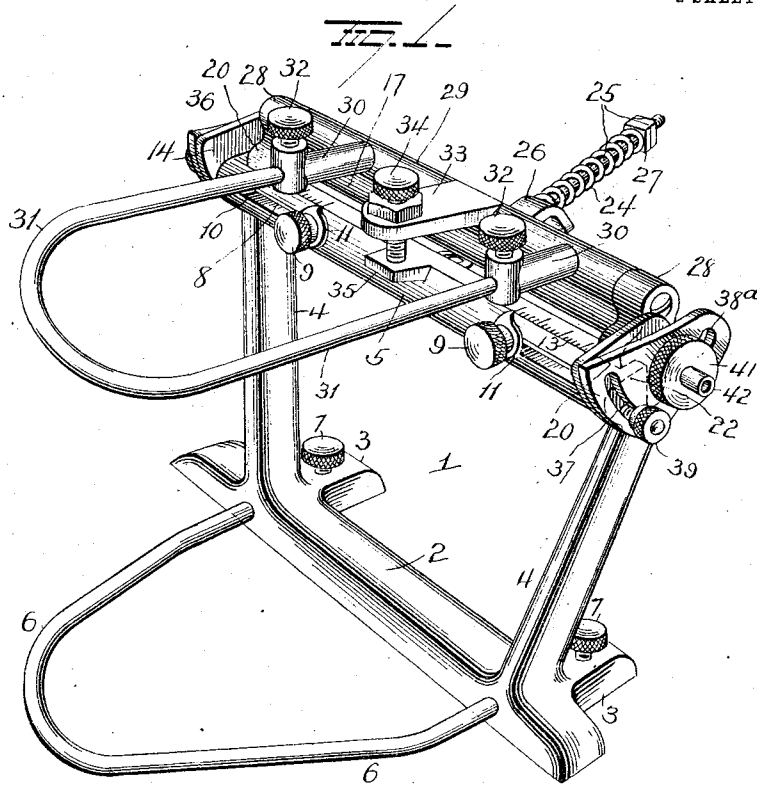


W. W. EVANS.
DENTAL ARTICULATOR.
APPLICATION FILED DEC. 18, 1911.

1,055,894.

Patented Mar. 11, 1913.

2 SHEETS—SHEET 1.



WITNESSES
E. Nottingham
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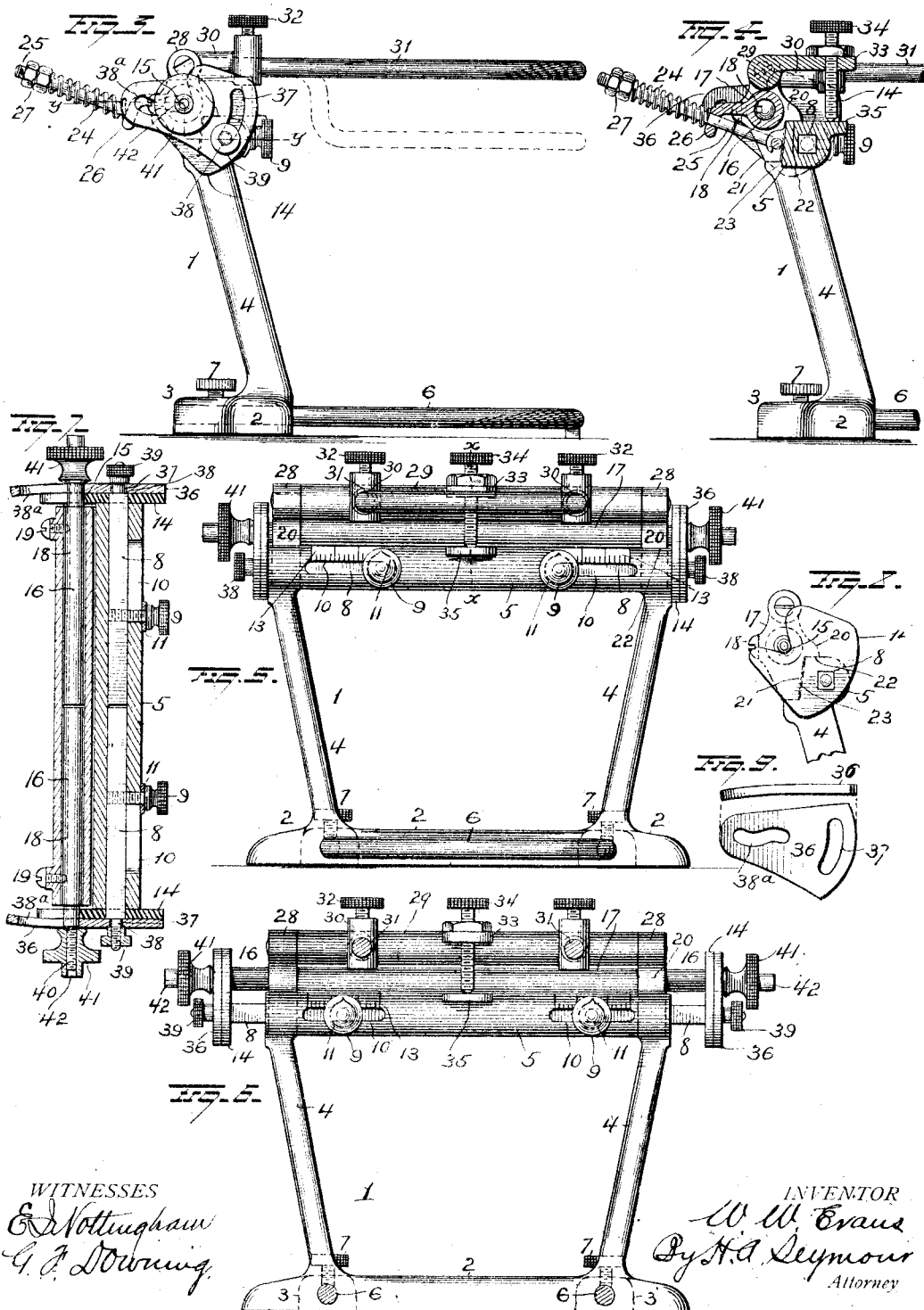
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UNITED STATES PATENT OFFICE.

WILLIAM W. EVANS, OF HAMILTON, VIRGINIA, ASSIGNOR TO THE S. S. WHITE DENTAL MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

DENTAL ARTICULATOR.

1,055,894.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Application filed December 18, 1911. Serial No. 666,404

To all whom it may concern:

Be it known that I, WILLIAM W. EVANS, of Hamilton, in the county of Loudoun and State of Virginia, have invented certain new and useful Improvements in Dental Articulators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in dental articulators of the so-called anatomical class which comprise lower and upper model-holding members, frames or jaws having hinged connection with each other to permit of a direct opening and closing of the jaws, and also a connection permitting of a lateral rocking movement of the jaws crosswise of the plane of movement in opening and closing the jaws and also a backward and forward movement in the median line; articulators of this class also being provided with adjustable condyle plates to permit of the articulator being adjusted to accommodate the varying condyle paths found in different individuals.

The object of all dental articulators of the anatomical class is to produce the most perfect and natural articulation and occlusion of artificial teeth mounted upon plates to be worn in the mouth. This object is usually sought to be accomplished by so connecting the members or jaws that the lower member will have the capacity of being moved similarly to the movements of the human mandible.

The general object of my invention is to produce more perfect and natural articulation of the artificial teeth by constructing an articulator more nearly reproducing the movements of the human mandible than has been attained. This object I accomplish by providing an improved connection between the condyle plates and the upper member or frame. This object is further accomplished by providing an adjustment of the condyle plates toward and away from each other.

With these and other objects in view, the invention consists in certain novel features of construction and combinations of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of an articulator em-

bodiment of my improvements; Fig. 2 is a plan view of the same; Fig. 3 is a side elevation; Fig. 4 is a transverse section on the line $x-x$ of Fig. 5; Fig. 5 is a front elevation; Fig. 6 is a front elevation illustrating the laterally extensible feature of the device; Fig. 7 is a sectional view on the line $y-y$ of Fig. 3; Fig. 8 is a detail view showing the stops for insuring the normal positions of the hinge bar and the upper model yoke; and Fig. 9 illustrates one form of the interchangeable slotted plates of the condyle hinge construction.

The articulator comprises a lower member or jaw 1 consisting of a base 2, uprights 4, a head 5, and a model-holding bow or yoke 6; and an upper member or jaw consisting of a head 17, a hinge-bar 29 and a model-holding bow or yoke 31. The model-holding bows are detachably connected to the lower and upper frames, for which purpose the base 2 of the lower member is provided with socketed extensions 3 and set-screws 7 and the hinge-bar 29 of the upper frame is provided with socketed extensions 30 and set screws 32. The lower and upper members are yieldingly united by a spring connection consisting of a rod 25 and a coiled spring 24 surrounding the same. The rod is hinged centrally between the ends of the head 5 of the lower member and passes through an opening in lug 26 projecting rearwardly from the head 17 of the upper member. An adjustable nut 27 on the rod 25 affords bearing for one end of the spring 24, the other end of which bears upon the lug 26. To provide a substantial connection between the members, the head 5 of the lower member is formed with shoulders 22 and 23 against which bear shoulders 20 and 21 formed on the head 17 of the upper member, the spring 24 serving to normally hold the shoulders of the upper member in contact with the shoulders of the lower member. Condyle plates 36-36 are connected one to each side of the head 5 of the lower member. Each condyle plate is provided with an elongated slot 38^a, into or through which passes an extension rod 16 of the head 17, of the upper member. The condyle plates 36 are so connected as to be capable of being rocked so that the slots 38^a constituting the condyle paths may be placed in different positions to correspond with the condyle paths in any particular patient being treated, it of course

being understood that the two plates are adjusted correspondingly. This construction provides for the lateral rocking movement of the jaws crosswise of the plane of movements in opening and closing of the jaws and also a backward and forward movement in the median line. The condyle plates merely serve to guide the jaws during this lateral rocking movement, the spring 24 serving to control the movement of the jaws and return them automatically to their normal position with the shoulders of the heads properly abutting against each other.

In articulators of this class as heretofore constructed the pintles of the hinge connection between the upper and lower members extend through the slots of the condyle plates. Instead of this construction I have provided the head 17 with extension rods 16—16 separate and distinct from the pintles, these extension rods, as before explained, passing through the slots 38^a of the condyle plates 36. The pintles of the hinge-bar 29 of the upper member are seated in lugs 28 on the head 17 of said upper member. This construction it will be seen provides for the direct opening and closing movements of the jaws without moving the extension rods which pass through the slots of the condyle plates, the advantage of which construction will further on be made plain.

The condyle plates 36 are constructed and connected as follows:—Rigidly secured to the end of each extension rod 8 of the head 5 of the lower member is a supporting plate 14, against the outside of which the condyle plate 36 bears. Each condyle plate is connected to its supporting plate in such manner that the condyle plate may be turned or rocked about the extension rod 16 as a center, so that by turning said plate its elongated slot 38^a (the condyle path) may be adjusted into any desired position without disturbing its proper relation to said extension rod 16 which passes through said slot. This may be accomplished, for example, by a threaded lug 38 projecting from the supporting plate 14, passing through a slot 37 in the condyle plate and describing an arc about the extension rod 16, a nut 39 on said lug serving to clamp the condyle plate to its supporting plate. A seat 15 may be formed in each of the fixed supporting plates 14 for the reception of the extension rods 16 which rest in said seat when said rods are in their normal position, which is when the before mentioned shoulders 20—21 of the head 17 of the upper member are seated against the shoulders 22—23 of the head 5 of the lower member. If desired heads or knobs 41 may be formed upon or attached to the extremities of the extension rod 16 for the purpose of providing means for applying pressure for rocking the members laterally or rearwardly and forwardly. Also if desired these

knobs 41 or the ends of said extension rods may be formed with sockets 42 to provide for face-bows or other measuring devices forming no part of this invention being used in connection with the articulator.

In addition to the usual direct opening and closing movements of the upper and lower members provided for by the hinged connection, a movement essential to all dental articulators; and to the lateral rocking movement of said members, including the adjustable condyle plates, made so for the purpose of reproducing the various planes of condyle paths which differ in different individuals, I have provided another adjustment of said condyle plates. This is a lateral adjustment of said plates toward and away from each other, the object of which is to accommodate or reproduce the distance apart of the human condyles which differ in each individual. The construction providing for this adjustment may be described as follows:—The head 5 of the lower member is tubular or formed with sockets to which the extension rods 8 are slidably fitted. The head 17 of the upper member is similarly formed with sockets in which the extension rods 16 are slidably fitted, the latter being provided with grooves 18 for the reception of set screws 19 for holding said extension rods in adjusted position. By means of this construction the condyle plates 36 as well as their supporting plates 14 may be easily moved in and out or toward and away from each other, the extension rods sliding in and out to accommodate these movements. Means should be provided for locking the plates in any position to which they may be adjusted. Simple locking means, as shown, consist of headed screws 9 passing through elongated slots 10 in the head 5 and screwing into the extension rods 8.

If desired the head 5 may be formed with graduated scales 13 opposite each slot 10 and a pointer or index 12 movable with each extension rod 8 for the purpose of designating the exact location of the condyle plates.

The operation and advantages of my improved articulator, briefly stated, are as follows:—Plaster models of the upper and lower human jaws having artificial teeth mounted upon them are secured to the upper and lower bows or yokes 31 and 6, respectively, in the usual manner. By means of the hinge connection between the hinge-bar 29 and the head 17 of the upper member, the models may be opened and closed, an adjusting screw 34 seated in an arm 33 projecting forwardly from the hinge-bar 29 and adapted to bear upon a forward projection 35 on the head 5 of the lower member, serving to determine the proper relation between the upper and lower models. Since the hinge connection is between the hinge-

[illegible]

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normally in contact with each other; extension rods projecting from the sides of the head of the lower section, condyle plates carried by said extension rods, elongated slots
5 in said plates, extension rods projecting from the sides of the head of the upper member, said rods passing through the elongated slots of said condyle plates, the extension rods of both the lower and upper
10 heads having slidable connection with said head, means for locking said extension rods in any position to which they may be adjusted.

15 7. In an articulator, the combination with a lower member comprising a head and means for securing a model-holding bow; of an upper member comprising a head and means for securing a model-holding bow; means for yieldingly holding said heads

normally in contact with each other; extension rods projecting from the sides of the head of the lower section, condyle plates carried by said extension rods, rocking connections between said plates and said extension rods, means for locking said plates
20 in any position to which they may be adjusted, elongated slots in said plates; and extension rods projecting from the sides of the head of the upper member, said rods passing through the elongated slots in said
30 condyle plates.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

WILLIAM W. EVANS.

Witnesses:

R. S. FERGUSON,
GEORGE F. DOWNING.