

J. B. DAVIS & H. LEUCHSENRING.

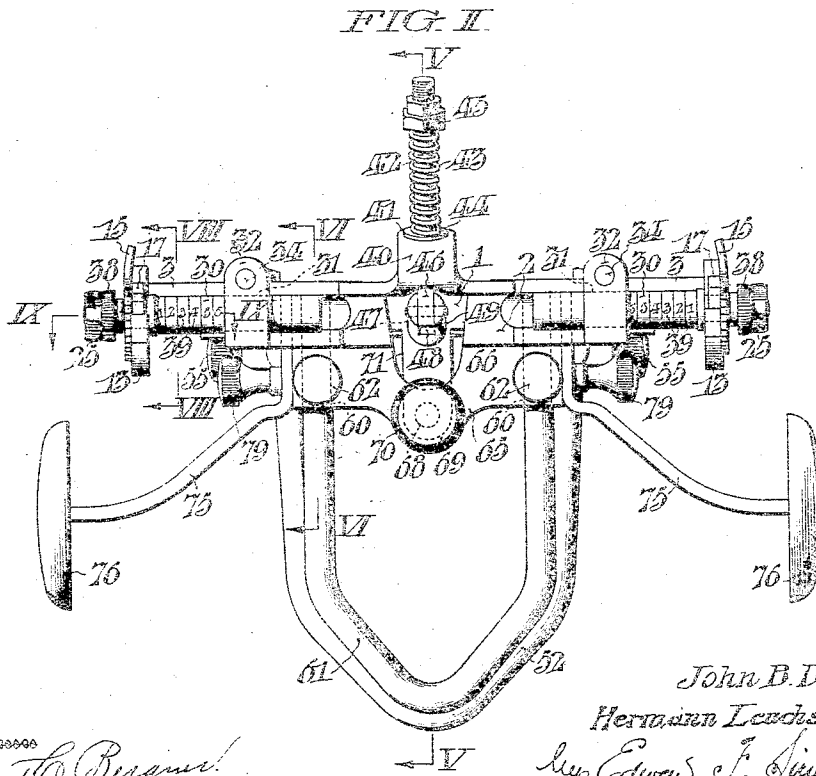
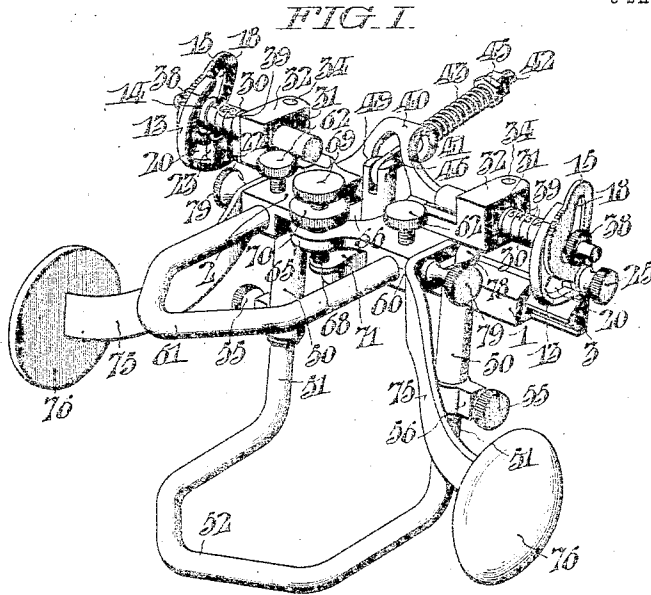
DENTAL ARTICULATOR.

APPLICATION FILED DEC. 19, 1911.

Patented Mar. 11, 1913

3 SHEETS—SHEET 1.

1,055,718.



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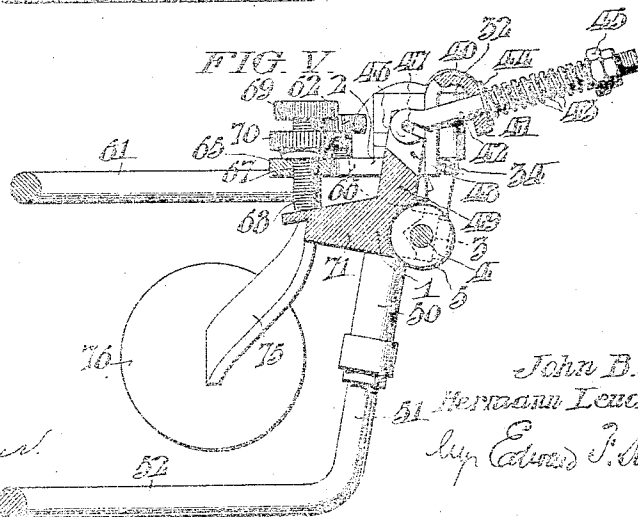
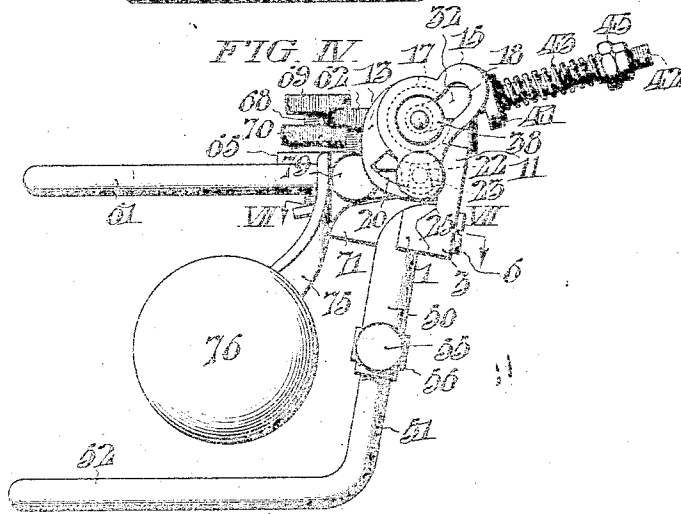
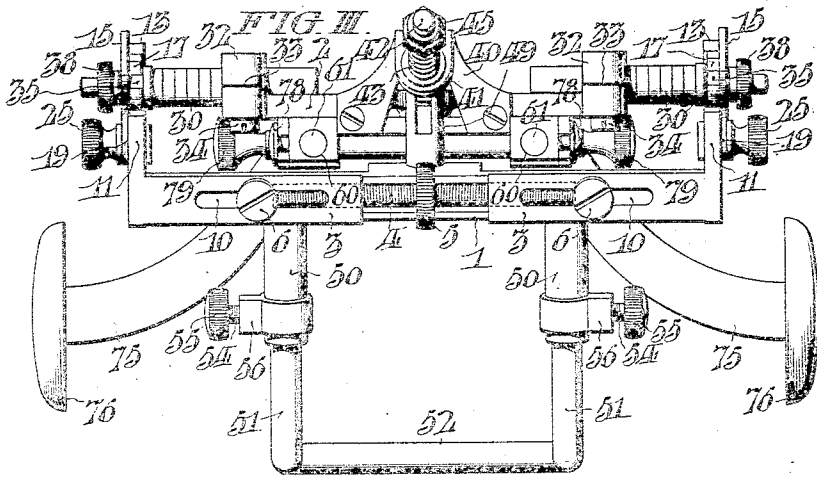
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3 SHEETS—SHEET 2.

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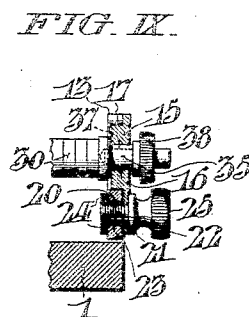
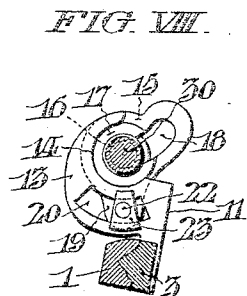
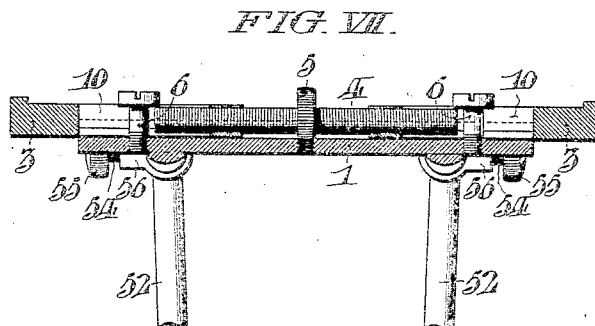
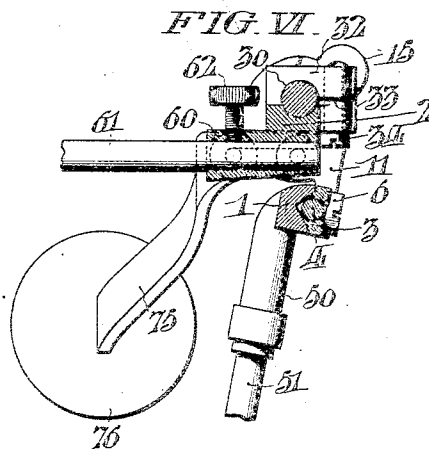
DENTAL ARTICULATOR.

APPLICATION FILED DEC. 19, 1911.

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3 SHEETS-SHEET 3.

1,055,718.



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UNITED STATES PATENT OFFICE.

JOHN B. DAVIS, OF LANSDOWNE, AND HERMANN LEUCHSENBRING, OF NORWOOD, PENNSYLVANIA, ASSIGNORS TO THE S. S. WHITE DENTAL MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

DENTAL ARTICULATOR.

1,055,718.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Application filed December 19, 1911. Serial No. 666,808.

To all whom it may concern:

Be it known that we, JOHN B. DAVIS and HERMANN LEUCHSENBRING, citizens of the United States, residing, respectively, in
5 Lansdowne, county of Delaware, State of Pennsylvania, and Norwood, county of Delaware, State of Pennsylvania, have invented certain new and useful Improvements in Dental Articulators, of which the
10 following is a specification.

Our invention relates to articulators employed by dentists for obtaining the proper articulation and occlusion of artificial teeth and which comprise upper and lower mem-
15 bers each provided with a model holding device and the said members having hinged connection with each other, the said connection being such as to permit of opening and closing movements of the said members in
20 directions parallel with the median plane and also permitting relative movement in a direction transverse to said median plane, and backward and forward movements rela-
25 tively to each other; such articulators also including condyle plates which are angularly adjustable to provide means for accommodating the varying requirements of the con-
dyle paths of different individuals.

One of the objects of our invention is to
30 provide a construction of articulator including means whereby movements of the lower member in directions to simulate the movement of the mandible of a human being may be facilitated.

35 Although the upper member of the articulator may be moved with relation to the lower member, it is desirable that the relative movements of the members thereof for the purpose of securing proper articulation
40 and occlusion of the artificial teeth should be accomplished by moving the lower member because it is this member which corresponds to the mandible and it is the latter which is moved during the process of mastication. It
45 will be assumed, therefore, that the upper part of the articulator is to be held in relatively fixed position.

A further object of our invention is to provide means whereby the condyle plates
50 at the opposite sides of the articulator may be adjusted laterally toward and from each other in order that they may be moved into positions corresponding to the condyles of the respective patients who may be under

treatment. It is desirable and essential that
55 these plates be separated from each other distances equal to the distances between the condyles of a patient in order that the lower member, carrying the model of the lower
60 teeth, will move as nearly as possible along the same lines and paths as would the mandible of the patient under treatment so that the proper articulation and occlusion of the dentures may be secured.

Other objects and advantages of our in-
65 vention will be hereinafter referred to and described in the specification or will be apparent therefrom.

In order that our invention may be more readily comprehended and understood and
70 for the purpose of facilitating the description thereof, we have illustrated one from of a convenient embodiment thereof in the accompanying drawings but it will be understood that changes and modifications in the
75 details of construction may be made within the scope of the claims without departing from our invention.

In the drawings:—Figure I is a perspec-
80 tive view of a dental articulator embodying our invention; Fig. II is a top plan view of the same; Fig. III is a rear view of the same; Fig. IV is a side elevation of the same; Fig. V is a central transverse sectional
85 view on the line V—V of Fig. II; Fig. VI is a transverse sectional view on the line VI—VI of Fig. II; Fig. VII is a sectional view on the line VII—VII of Fig. IV; Fig. VIII is a sectional view on the line
90 VIII—VIII of Fig. II, certain parts being shown in side elevation; and Fig. IX is a sectional view on the line IX—IX of Fig. II.

Referring to the drawings, 1 designates
the body part or portion of the lower mem-
95 ber of an articulator and 2 the corresponding part of the upper member thereof. The said part 1 is provided at its opposite ends with extension members 3 which are slid-
100 able longitudinally upon the main or body part 1. For the purpose of causing sliding movement of the members 3 with respect to
the part 1 we have provided a right and left
105 screw 4 having a milled wheel 5 thereon by means of which it is turned. The opposite ends of the said screw have screw-threaded engagement with the inner ends of the mem-
bers 3 which latter are secured and held in position upon the part 1 by means of headed

screws 6 which screw into the part 1 as illustrated particularly in Fig. VII of the drawings. The members 3 are provided with slots, as indicated at 10, through which the screws 6 project. By turning the right and left screw 4 in one direction the members 3 are caused to move outwardly and by turning the same in the opposite direction the said members are caused to move inwardly, such movements being lateral with respect to the articulator structure. The outer ends of the members 3 are provided with upwardly extending parts 11 which are illustrated as being integral with the said members 3 but may, if desired, be connected in any other suitable manner. The upper ends of the upwardly extending parts 11 are enlarged, as indicated at 13, and are provided with circular slotted openings 14.

Condyle plates 15 are provided at the opposite ends of the articulator and constitute parts of the connection between the said lower and upper members of the articulator. The said plates are located outside of the upwardly extending parts 11 and each is provided with elongated slots 18 having circularly shaped ends. The ends 16 of the said slots 18 are surrounded by flanges 17 which constitute what may be termed hubs which are seated in the slotted openings in the enlarged upper ends 13 of the parts 11. The lower ends 19 of the said plates 15 extend across slots 20 which are formed in the enlarged upper ends 13 of the parts 11 and are concentric with the circular slotted openings 14 in the said ends. The said ends 19 of the said plates 15 are perforated as indicated at 21 for the reception of screws 22 which are adapted to engage nuts 23 having wings 24. Portions of the said nuts 23 are located in the concentric slots 20 and the wings thereof are seated against the inside surfaces of the parts 11 upon opposite sides of the slots 20. The screws 22 are turned or operated to loosen or tighten the same by means of the milled heads 25. The upper member of the articulator comprises extension members 30 which are secured in holes 31 formed in enlargements or heads 32 at the opposite ends of the body part 2 of said upper member. These enlargements are split, as indicated at 33, and the split portions are secured together by means of screws 34. By loosening the screws movement of the members 30 in or out is permitted, such movement being lateral with respect to the articulator structure. The said members 30 may be clamped securely in any position to which they may be adjusted.

The outer ends of the members 30 are provided with reduced portions, as indicated at 35, which portions constitute the pintles of the pivotal or hinged connection between the upper and lower members of the articulator. The said reduced portions

or pintles 35 extend into the elongated slots 18 in the plates 15, the latter being secured upon the said pintles by means of the screws 37 having milled heads 38.

By reason of the connection of the condyle plates 15 with the members 3 longitudinal movement of the latter, as above described, causes corresponding longitudinal movement of the members 30 and the pintles 35 formed at their outer ends, such movements being in a lateral direction with respect to the articulator structure.

It is, of course, understood that longitudinal movement of the members 3 causes lateral movement of the said plates 15.

The members 30 are scored or lined, as indicated at 39, and the spaces between the said scores or lines marked with the figures 1, 2, 3, 4, etc. for a purpose which will be hereinafter described.

The central part of the body 2 of the upper member of the articulator is provided with an upwardly extending bifurcated part 40, the upper end of which is extended rearwardly and downwardly to form a flange, as indicated at 41. The said downwardly and rearwardly extending portion is perforated for the reception of the rod 42 which supports the coiled spring 43. The said spring is held between a washer 44 which is seated against the rear side of the downwardly extending part 41 and a nut 45 having screw-threaded connection with the outer rear end of the rod 42.

The inner end of the rod 42 is provided with a hook 46 which engages a pintle 47 which extends across a slot 48 in the upper end of the projection 49, which extends upwardly from the body 1 of the lower member of the articulator.

The purpose of the spring 43 is to return the upper and lower members of the articulator into normal position after there has been relative movement of the said members with respect to each other for any purpose. By means of the rod 42, the spring 43 and parts immediately associated therewith, a yielding connection between the upper and lower members of the articulator is obtained.

The part 1 of the lower member of the articulator is provided with downwardly extending projections 50 which are provided with sockets in their lower ends which receive the inner upturned ends 51 of the bow-shaped device 52 for supporting the model of the lower dentures.

The device 52 is secured to the downwardly extending projections 50 by means of the binding screws 54 having the milled heads 55 by means of which the same are loosened and tightened.

For the purpose of providing a sufficient amount of material for the screw-threads with which the binding screws 54 engage,

we have provided the lower ends of the projections 50 with sleeves having projections 56 thereon in which the screw-threaded openings are formed.

5 The body 2 of the upper member of the articulator is provided with holes or openings 60 into and through which the ends of the bow 61 project. The bow is secured in
10 any position to which it may be adjusted in the said openings 60 by means of binding screws 62.

The central portion of the body 2 of the upper member of the articulator extends forwardly, as indicated at 65, and is slotted
15 or cut away, as is indicated at 66.

A screw-threaded opening 67 is formed at the center of the forwardly projecting portion and an adjustable spacing screw 68 is provided for the said opening. The said
20 screw is provided with a milled head 69 by which it is turned and it is locked into whatever position it may be adjusted by means of a binding nut 70. The lower inner end of the adjustable spacing screw 68
25 contacts with the upper guiding surface formed upon a projection 71 upon the body 1 of the lower member of the articulator.

The purpose of the adjustable spacing screw 68 is to secure the proper distances
30 apart of the members of the articulator.

For the purpose of conveniently supporting the upper member of the articulator in substantially fixed position during the manipulation of the lower member thereof
35 to secure proper articulation and occlusion of the models of the upper and lower dentures carried upon the supports 52 and 61 therefor, I have provided the forwardly, outwardly and downwardly extending arms
40 75 having flat disk-like members 76 at their outer ends which are adapted to be held in the hands and the upper member held thereby in substantially fixed position. The rear ends of the arms 75 are provided
45 with open-ended slots, as indicated in Fig. 1 of the drawings, and are detachably secured in position by means of the stationary screws 78 and the milled headed tightening screws 79 which pass through the said slots.

50 It is desirable that the arms 75 by means of which the articulator is held and supported during manipulation of the lower member thereof should be detachable or removable for the reason that the articulator
55 would be more conveniently handled during the mounting of a model or models thereon. Also it is desirable that the said arms be detachable or removable for the reason that an operator who has been accustomed to the use of articulators which are
60 not provided with corresponding means for holding and supporting the articulators might prefer to use the same without the presence of such arms. The presence of
65 these arms 75 makes it practicable for the

operator to hold and maintain the upper member of the articulator in relatively fixed position and to manipulate and operate the lower member of the articulator as has been
70 hereinbefore described and set forth.

In the use of the articulator after the models of the dentures have been secured upon the supports 52 and 61 therefor, it is held or supported in the hands or between
75 the hands by means of the arms 75 and with any one or more of the fingers located at the opposite sides of the same the lower member is manipulated either by pulling the same directly forward upon the pintles or by allowing one end of the said lower members
80 to remain stationary and moving the other end forward.

By reason of the fact that the slots formed in the condyle plates 15 are curved, it is obvious that the lower member will not have
85 rectilinear movement.

By reason of the fact that the plates 18 are angularly adjustable about the pintles 35, the direction of the slots 18, constituting the condyle paths with respect to a vertical
90 plane extending parallel with the pintles, may be changed and in this way the paths of movement of the lower member of the articulator changed so as to conform to and simulate as nearly as possible the movements of the mandible of the patient under
95 treatment.

The movements of the condyles of different patients may vary slightly and to provide a further accommodation of our articulator to such conditions, the condyle
100 plates are made removable by removing the screws 22 and the screws 37 so that said plates can be replaced by others having slots 18 of slightly different contour.

105 In the examination and treatment of a patient for the purpose of providing such patient with artificial teeth, the dentist will locate the condyles by known means and mechanism, and thereafter will adjust the condyle plates and parts connected thereto including the pintles of the articulator embodying our invention in the direction of the axes of the said pintles, that is, laterally of the articulator structure, so as to position the condyle plates and the points of pivotal connection of the upper and lower members the same distance apart as the condyles of the patient under treatment.

One great advantage in providing means
120 for adjusting the condyle plates and pintles of the articulator so that they occupy positions corresponding to the condyles of the patient is that the movement of the lower member will more nearly correspond to and
125 simulate the movements of the mandible of the patient than would be the case were the condyle plates and pintles otherwise positioned.

It is desirable that the same articulator 130

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may be used for different patients and this may be done by removing the models of the dentures of one patient and substituting those of another, first, however, making a record of the positions of the parts by noting the lines or scores thereon which are most nearly in alinement with the ends of the part 2.

Having thus described our invention, we claim:—

1. A dental articulator including upper and lower members, means spaced apart laterally of the articulator for pivotally connecting the ends of said members, and means for laterally adjusting the points of pivotal connection of said members toward and away from each other for the purpose stated.

2. A dental articulator including upper and lower members for supporting models of the upper and lower dentures, means including pintles for pivotally connecting the said members, and means for adjusting the said connecting means laterally toward and from each other for the purpose of varying the distance between the points of pivotal connection of the said members.

3. A dental articulator including upper and lower members for supporting models of upper and lower dentures, pintles for pivotally connecting the said members at their opposite ends, and a right and left screw for causing movement of the said pintles toward and away from each other for the purpose of adjusting the points of pivotal connection of the said members.

4. A dental articulator including upper and lower members for supporting models of the upper and lower dentures, means including pintles for pivotally connecting the said members at their opposite ends, and means carried by the lower member for causing movement of the said connecting means in the direction of the axes of said pintles toward and away from each other for the purpose of adjusting the positions of the points of pivotal connection of the said members.

5. A dental articulator, comprising upper and lower members, the upper member including a central body portion and having pintles secured at its opposite ends which pintles are movable longitudinally with respect to the said body portion, and the lower member including a body portion having slidable members secured at its opposite ends, means for connecting the said slidable members to the said pintles, and means for causing longitudinal movement of the said slidable members and the said pintles.

6. A dental articulator comprising upper and lower members, the upper member including a central body portion which is provided with pintles which are movable longitudinally thereon and the lower member including a body portion having slidable mem-

bers secured at its opposite ends, upwardly extending portions secured to the outer ends of said slidable members which portions have pivotal and sliding connection with the said pintles, and means upon the body portion of the said lower member for causing longitudinal movement of the sliding parts thereon and thereby causing longitudinal movement of the said pintles.

7. A dental articulator comprising upper and lower members which members are pivotally connected together at their opposite ends and the upper of said members having arms extending forwardly and downwardly therefrom to be held in the hands for supporting the same in relatively fixed position whereby the lower of said members may be moved pivotally, forwardly and in a lateral and angular direction with respect to said upper member.

8. A dental articulator comprising upper and lower members, the upper of said members having arms adapted to be held in the hands for supporting the upper member in a relatively fixed position, leaving the lower member to be moved relatively to the upper member.

9. A dental articulator comprising upper and lower members, the said upper member being provided with pintles and the lower member being provided with devices having cam-shaped slots therein for engagement with the said pintles and the said upper member being provided with arms to be held in the hands for supporting in relatively fixed position the upper member of the articulator while the lower member thereof is being manipulated.

10. A dental articulator comprising upper and lower members, the upper of said members having forwardly extending arms which are detachably connected thereto for supporting the said articulator while the lower member thereof is being manipulated.

11. A dental articulator comprising upper and lower members having forwardly extending model supporting devices and the upper of said members having arms which extend forwardly, downwardly and laterally to points on opposite sides of the articulator structure and intermediate the planes of the said model supporting devices, which arms are adapted to be held in the hands for supporting the upper member in a relatively fixed position leaving the lower member to be moved relatively to the upper member.

12. In an articulator, the combination of a lower member having a body part provided with means for securing a model holding device thereto, an upper member having a body part provided with means for securing a model holding device thereto, laterally adjustable extensions projecting from the ends of each of the said body parts, and slotted plates secured to the lateral exten-

sions from the body part of the lower member, the lateral extensions from the body part of the upper member being movable in the slots of said plates.

5 13. In an articulator, the combination of a lower member having a body part provided with means for securing a model supporting device thereto, laterally adjustable extension members carried by said body
10 part, plates secured to said extension members and having elongated slots in their free portions, an upper member having a body part provided with means for securing a model supporting device thereto, laterally
15 adjustable extension members carried by the said body part of the upper member, and a spring connection between the said upper and lower members and which tends to normally retain the lateral extension members
20 of the said upper member at one end of the slots in said plates.

14. In an articulator, the combination of a lower member having a body part provided with means for securing a model supporting device thereto, an upper member
25 including a body part having means for securing a model supporting device thereto, interchangeable plates removably secured to the said lower member and provided with elongated slots in their free portions, and a
30 centrally located spring connection between the said upper and lower members.

35 15. In an articulator, the combination of upper and lower members, means for holding the said members in yielding relation with respect to each other, and angularly and laterally adjustable condyle plates having connection with the opposite ends of the

16. In an articulator, the combination of 40 upper and lower members, means for holding the said members in yielding relation with respect to each other, and laterally adjustable condyle plates having connection with the opposite ends of said members. 45

17. In an articulator, the combination of upper and lower members, means for holding the said members in yielding relation with respect to each other, laterally adjustable condyle plates secured to one of the 50 said members and having elongated slots in their free ends portions and the opposite ends of the other of said members projecting into the said slots and being slidable therein.

18. In an articulator, the combination of 55 upper and lower members each having model supporting devices secured thereto, means for holding the said members in yielding relation with respect to each other, slotted condyle plates secured to the opposite 60 ends of the lower member the said plates being angularly and laterally adjustable, and the opposite ends of the upper member being provided with adjustable members which project into the slots of the 65 said plates and which members are adjustable laterally to correspond with the lateral adjustments of the said condyle plates.

In testimony that we claim the foregoing as our invention, we have hereunto signed 70 our names this 16th day of December, A. D. 1911.

JOHN B. DAVIS
HERMANN LEUCHSENBERG.

In the presence of
HARRY R. BARBER,
WILLIAM J. RUSSELL.