M. HOWARD.

DENTAL ARTICULATOR.

APPLICATION FILED FEB. 11, 1909.

968,055.

Patented Aug. 23, 1910.

3 SHEETS—SHEET 1.

Fig. 1.

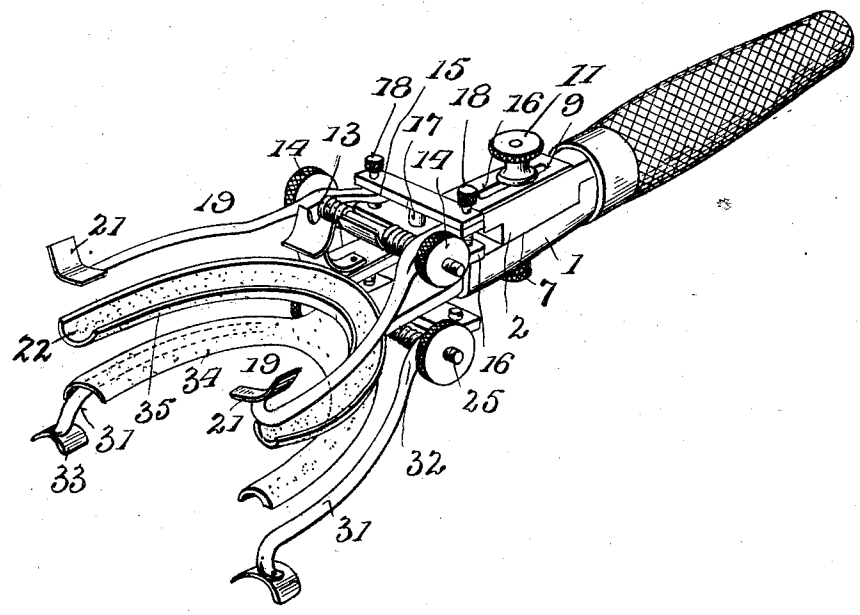
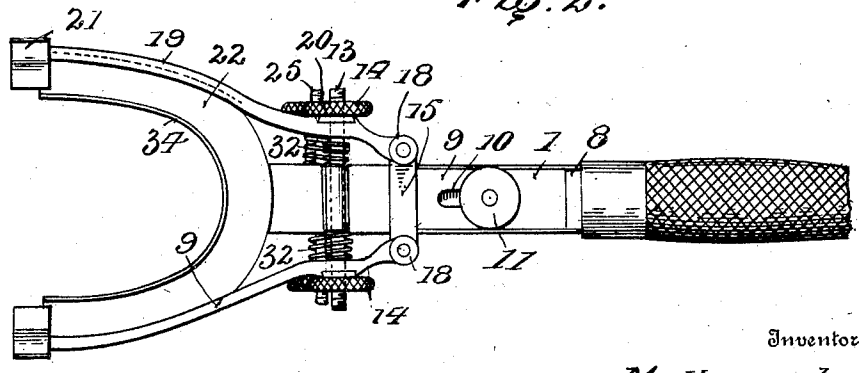


Fig. 2.



Witnesses

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3 SHEETS—SHEET 2.

Fig. 3.

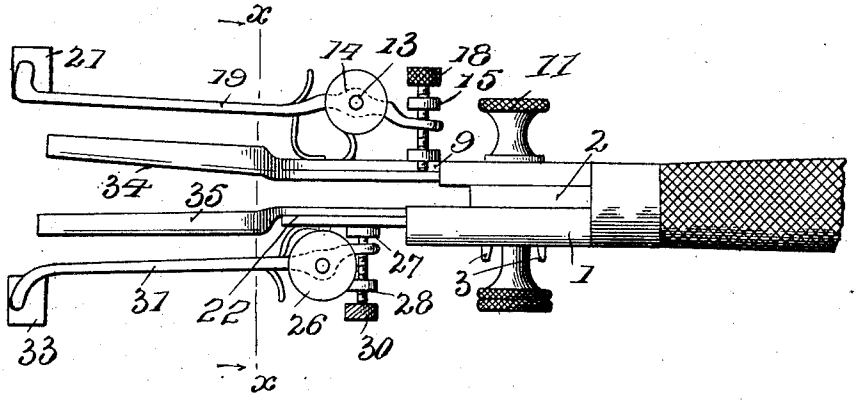
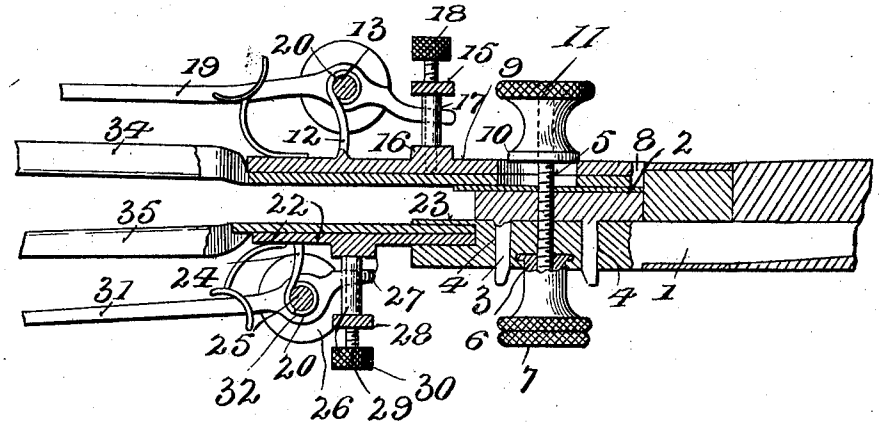


Fig. 4.



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3 SHEETS—SHEET 3.

Fig. 5.

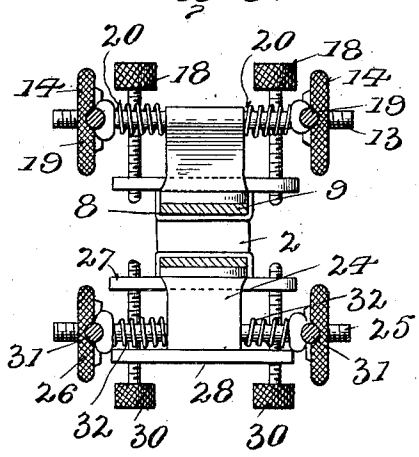


Fig. 6.

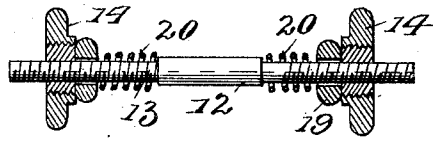


Fig. 7.

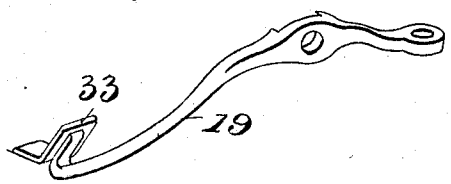
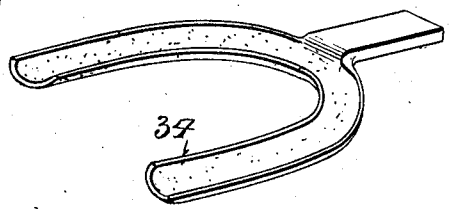


Fig. 8



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UNITED STATES PATENT OFFICE.

MENTOR HOWARD, OF CORVALLIS, OREGON.

DENTAL ARTICULATOR.

968,055. Specification of Letters Patent. **Patented Aug. 23, 1910.**

Application filed February 11, 1909. Serial No. 477,265.

To all whom it may concern:

Be it known that I, MENTOR HOWARD, citizen of the United States, residing at Corvallis, in the county of Benton and State of Oregon, have invented certain new and useful Improvements in Dental Articulators, of which the following is a specification.

The present invention supplies a device to facilitate the work of a dentist, both in the laboratory and when making impressions of the maxillary ridges preliminary to fitting the mouth of a patient with artificial dentures, the purpose being to provide an appliance which may be adjusted to meet all requirements and conditions of the mouth to be fitted with teeth wholly or in part, whether in the nature of bridge or plate work, thereby insuring perfect articulation of the teeth.

In devising the instrument provision is had for adapting the same for vertical, lateral and relative longitudinal adjustment to meet all possible requirements, the device comprising essentially four arms which are forwardly diverged, each arm having means coöperating therewith to effect independent vertical and lateral adjustment and the pairs of upper and lower arms being relatively adjustable forward and backward to insure correct and proper position of the rests at the ends of the arms with the maxillary ridges to obtain perfect and satisfactory results.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which;—

Figure 1 is a perspective view of an articulator embodying the invention. Fig. 2 is a top plan view of the appliance. Fig. 3 is a side view of the device. Fig. 4 is a vertical central longitudinal section of the articulator showing the parts on a larger scale and having end portions broken away. Fig. 5 is a vertical transverse section on the line *x*—*x* of Fig. 3 looking to the rear, as indicated by the arrows. Fig. 6 is a detail view of the upper standard, the transverse rod supported thereby and the thumb or set nuts mounted upon the threaded ends of said rod, showing the relation of the upper arms and the expansion springs coöperating therewith. Fig. 7 is a detail perspective view of one of the upper arms, and Fig. 8 is a detail perspective view of the lower holder for receiving the plastic material employed for taking an impression of the teeth in the maxillary ridge.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The appliance comprises a shank 1 which may constitute or be provided with a grip-piece for convenient manipulation when in operation. A head block 2 is mounted upon the shank 1 and is adjustable toward and from the same in a relatively vertical direction. Guide pins 3 project from the head block 2 and enter openings 4 in the shank 1 and give proper direction to the head block in its adjustments. A rod 5 passes through the head block and projects above and below the same and its end portions are threaded, the lower threaded end passing through an opening 6 in the shank 1 and receiving a thumb nut 7 having swivel connection with the relatively lower side of the shank. Upon turning the thumb nut 7 in one direction the head block 2 is moved away from the shank 1 and upon rotating the thumb nut 7 in the opposite direction the head block 2 is moved toward the shank. The head block 2 is formed in its upper side with a depression forming a seat 8 in which is fitted a bar 9 bearing the upper pair of arms and the adjusting device coöperating therewith. The rear portion of the bar 9 has a longitudinal slot 10 through which passes the upper end of the rod 5, said bar being secured in an adjusted position by means of a thumb nut 11 mounted upon the upper threaded end of the rod 5.

The bar 9 is provided near its forward end with a standard 12 to the upper end of which is attached a transverse rod 13 whose end portions are threaded and provided with thumb nuts 14. A cross head is also mounted upon the bar 9 and comprises upper and lower cross bars 15 and 16 and a centrally disposed post 17 connecting said cross bars. Set screws 18 are mounted in the end portions of the cross bars 15 and 16 in such a manner as to effect relatively vertical adjustment of the upper arms at their forward ends. The upper pair of arms 19 are of similar formation and are mounted near their rear ends upon the threaded ends of the transverse rod 13 and their rear ends are threaded and receive the set-screws 18. Ex-

pansion springs 20 are mounted upon the projecting ends of the transverse rod 13 between the standard 12 and the arms 19 and normally exert an outward pressure upon said arms to hold them separated or spread the required distance. When effecting lateral adjustment of the arms they turn upon the set screws 18 as vertical axes. When moving the forward ends of the arms 19 in a relative vertical direction by means of the set screws 18, they turn upon the end portions of the transverse rod 13, as an axis. The outer ends of the arms 19 are provided with rests 21 which are adapted to engage the maxillary ridges at the required point, so as to take up any fullness of the mouth and prevent wrinkling.

A plate 22 is fitted to the shank 1 and is adapted to be secured thereto in any desired position. As illustrated the shank is provided in its outer end with an opening 23 in which the rear end of the plate 22 is inserted and made secure. A standard 24 is pendent from the plate 22 near its outer end and supports a transverse rod 25, the projecting ends of which are threaded and receive thumb nuts 26. A cross head is provided at the lower side of the plate 22 and is similar in construction to the cross head provided upon the upper side of the bar 9 and comprises cross bars 27 and 28 and a vertical post 29. Set screws 30 are mounted in the outer ends of the cross bars 27 and 28 in a manner to insure relative vertical adjustment of the lower pair of arms when required. The lower arms are of similar formation and are mounted upon the threaded end portions of the transverse rod 25 and their rear ends have a screw thread connection with the set screws 30. Expansion springs 32 are mounted upon the threaded ends of the transverse rod 25 between the standard 24 and the arms 31 and normally exert a pressure to force the outer ends of the arms 31 apart. By turning the thumb nuts 26 either one or both of the arms 31 may be moved laterally at their outer ends to the required position. Upon turning the set screws 30 the arms 31 may be moved to bring their forward ends into the required vertical position. Rests 33 similar in formation to the rests 21 are provided at the outer ends of the arms 31 and face downward, so as to engage the lower maxillary ridge.

A tray or trough of any type commonly employed to receive the material, wax or plaster of paris, when taking the impression of the gums or like part, may be attached to the head block 2 and is adjustable upon said head block, its shank being slotted to receive the upper threaded end of the rod 5 and being secured in the seat 8 by means of the thumb nut 11. A similar tray or trough 35 is adapted to be secured either to the bar 22 or the shank 1 and may be of any formation, such as commonly employed for receiving plastic material when taking an impression of the lower jaw or maxillary ridge. The trays or troughs 34 and 35 may be used either singly or jointly according to the exigency of the case and the nature of the work to be performed.

In using the device the instrument is inserted in the mouth and the several set-screws adjusted so as to get the opposing jaws in perfect and natural relation one to the other. The instrument is then removed from the mouth and plaster of paris impressions or models made of the upper and lower set of teeth and said models mounted on an articulator in the usual manner after which the instrument is introduced between the models on said articulator, thus enabling the operator to obtain the correct length and position of the teeth relative to the alveolar ridge, and produce a natural and artistic effect. When the teeth are extracted from one jaw only, wax or similar plastic material is inserted in the trays before introducing the instrument into the mouth, but when the teeth have been extracted from both jaws no wax or plastic material is used.

From the disclosure herein and the illustration in the accompanying drawings it will be understood that the invention provides an articulator for dentist's use, which will enable a wide range of adjustments, so as practically to meet every condition and size of mouth of the patient, with the result that practically perfect articulation of the teeth is assured.

Having thus described the invention what is claimed as new is:—

1. A dentist's articulator comprising a shank, spaced upper and lower arms mounted upon the shank and relatively adjustable forward and backward, and wax receiving trays interposed between the arms.

2. A dentist's articulator comprising a handle, upper and lower sets of spaced arms, means for adjusting the arms of each set in a relative lateral direction, and trays interposed between the upper and lower sets of arms and adapted to receive plastic material.

3. A dentist's articulator comprising a handle, upper and lower sets of spaced arms, means for adjusting the sets of arms laterally toward and from each other and means for adjusting the arms of each set in a relative vertical direction.

4. An articulator for dentist's use comprising upper and lower arms, means for adjusting said arms relatively forwardly and backwardly, and means for moving said arms toward and from each other in a relative vertical direction.

5. In a dentist's articulator, the combination of spaced upper and lower arms, means

for adjusting said arms forwardly and backwardly, means for securing the arms in adjusted position, and other means independent of the first mentioned adjusting means for moving the arms to adjust the same laterally.

6. A device of the character specified, the combination of a support, a pair of arms mounted upon the support to move both laterally and vertically with reference thereto, a cross-head mounted upon the support, and set-screws carried by said cross-head and having screw-threaded connection with said arms.

7. In a device of the character set forth the combination of a support, arms mounted upon the support and adapted to receive both vertical and lateral adjustment at their outer ends, a transverse rod having its end portions threaded and passed through openings in said arms, thumb nuts mounted upon the threaded ends of said transverse rod, and expansion springs exerting an outward pressure upon the inner sides of said arms.

8. In a device of the character set forth, the combination of a support, a transverse rod mounted upon said support and having its end portions threaded, a cross-head carried by said support, set-screws mounted upon the cross-head, arms mounted upon the threaded ends of the transverse rod to both turn and move laterally thereon and having their rear ends engaged by the aforesaid set-screws, and means mounted upon the said transverse rod to effect lateral adjustment of the same.

9. A dentist's articulator comprising a shank, bars mounted upon the shank and each provided with a pair of arms and trays interposed between the pairs of arms and adapted to receive plastic material, said trays being adapted to be connected with said arms to act jointly with the arms carried thereby.

10. In an appliance of the character set forth, the combination of a shank, a head block mounted upon the shank, a rod attached to the head block and operating in an opening formed in the shank and having its end portions extended beyond the head block and threaded, a thumb nut mounted upon the threaded end of the rod and having swivel connection with the shank, guide means for directing the head block in its movements, a bar provided with mouth rests for adjustable connection with the head block, and a thumb nut mounted upon the opposite threaded end of the rod for securing said bar in the adjusted position.

In testimony whereof I affix my signature in presence of two witnesses.

MENTOR HOWARD. [L. S.]

Witnesses:
CHARLEY WITHAM,
GEO. W. DENMAN.