Jan. 28, 1936. H. SPIRO 2,029,003

ART OF DENTISTRY

Filed June 15, 1933 4 Sheets-Sheet 1

Fig. 1.

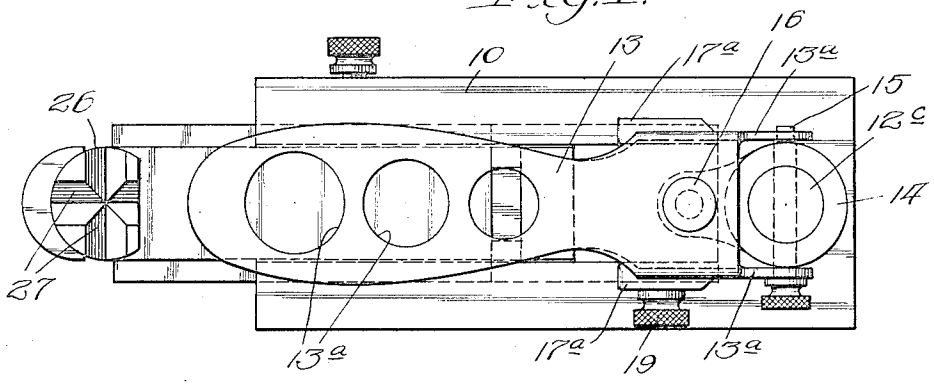


Fig. 2.

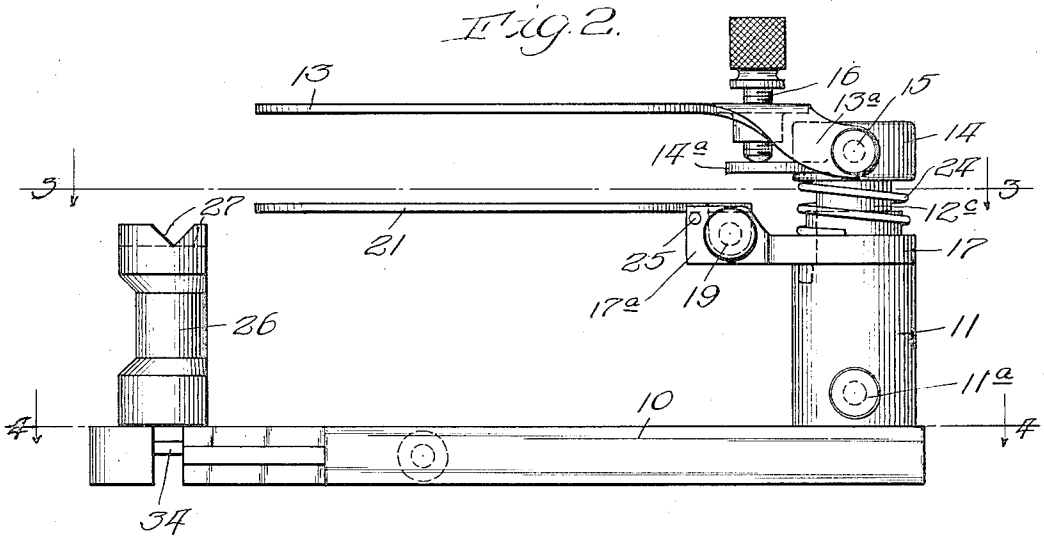
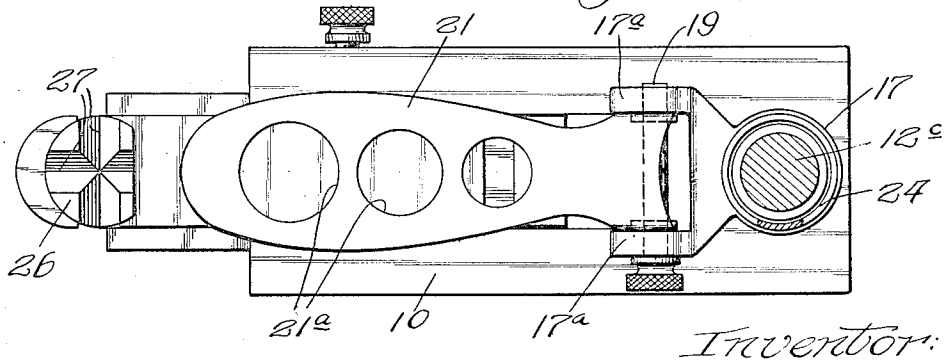


Fig. 3.



Inventor:
Harry Spiro,
By Dyer, Smith, Lee, Hamilton & Wiles,
Attys.

Jan. 28, 1936. H. SPIRO 2,029,003

ART OF DENTISTRY

Filed June 15, 1933 4 Sheets-Sheet 2

Fig. 4.

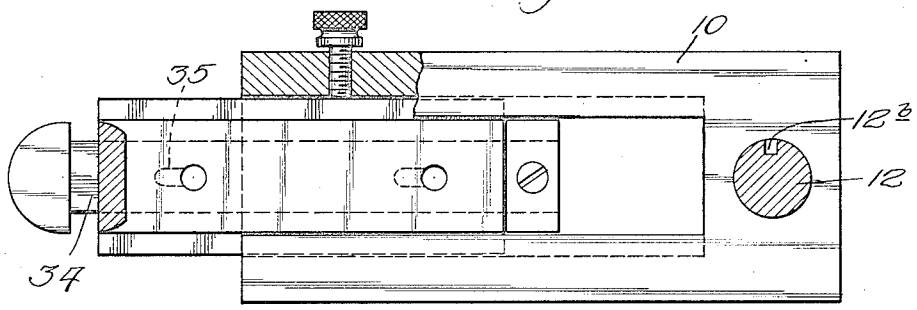


Fig. 5

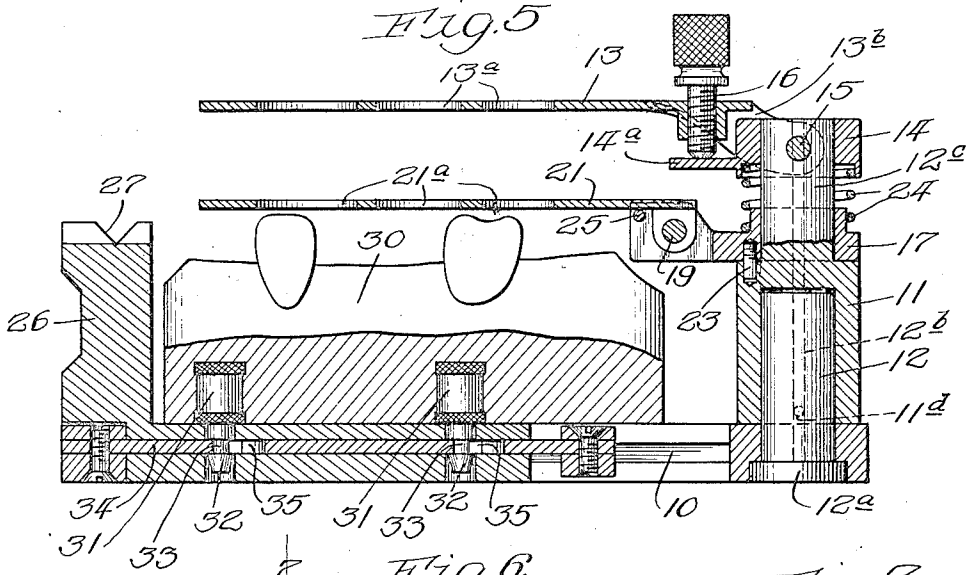


Fig. 6.

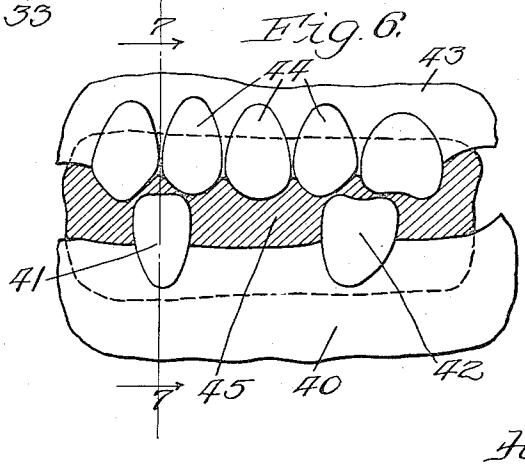
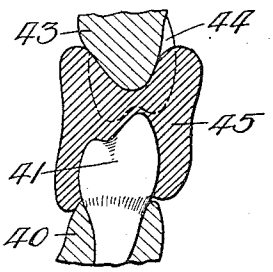


Fig. 7.



Inventor:
Harry Spiro,
By Dyrenforth, Lee, Christy & Miles,
Attys.

Jan. 28, 1936. H. SPIRO 2,029,003

ART OF DENTISTRY

Filed June 15, 1933 4 Sheets-Sheet 3

Fig. 8.

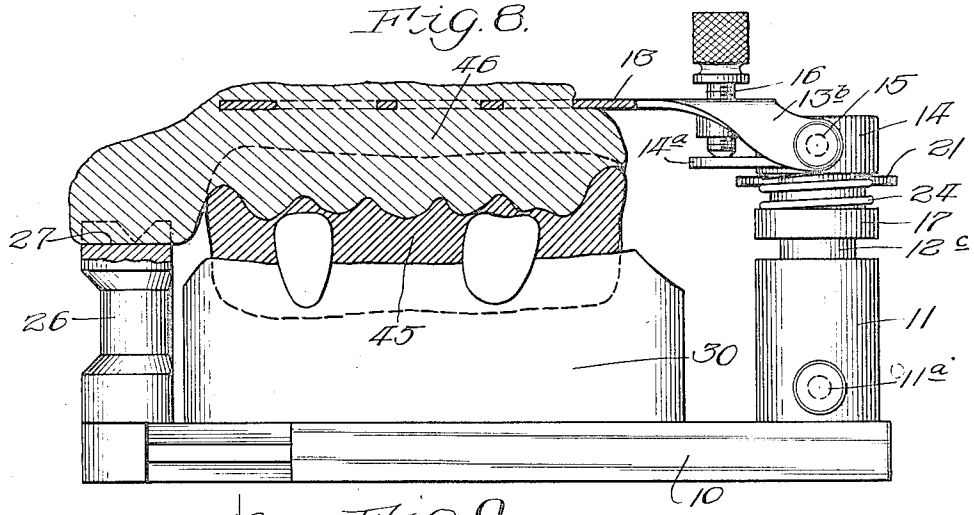


Fig. 9.

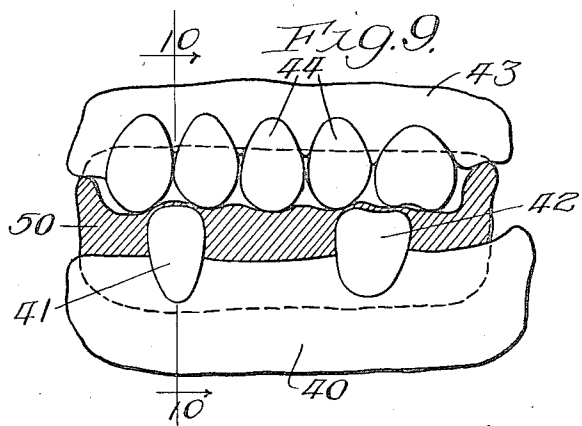


Fig. 10.

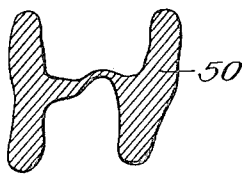
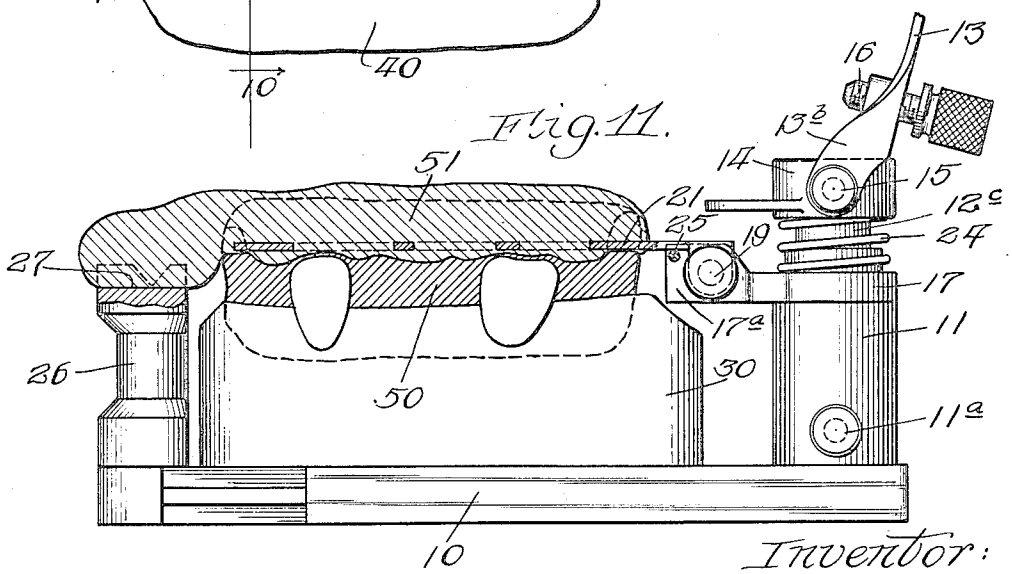


Fig. 11.



Inventor:
Harry Spiro,
By Dyrenforth, Lee, Chritton & Wiles,
Attys.

Jan. 28, 1936. H. SPIRO 2,029,003

ART OF DENTISTRY

Filed June 15, 1933 4 Sheets-Sheet 4

Fig. 12.

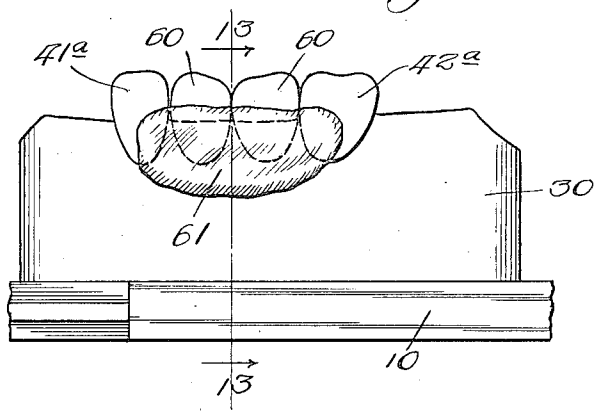


Fig. 13.

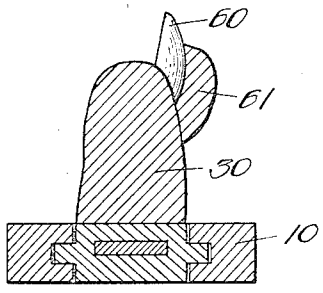


Fig. 14.

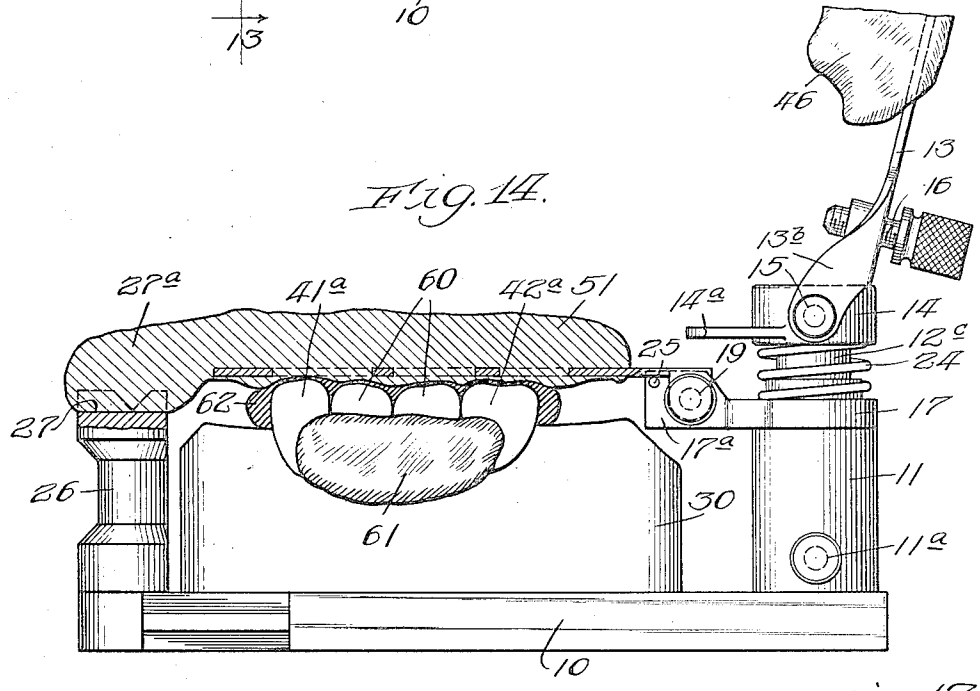


Fig. 15.

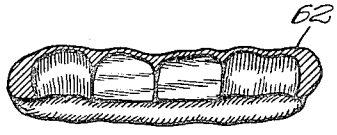
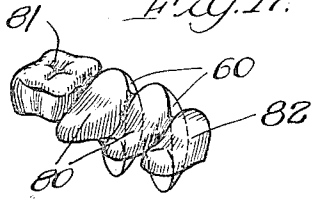


Fig. 16.



Fig. 17.



Inventor:
Harry Spiro,
By Wyman, Fitch, Le Gendre & Miles,
Attys.

Patented Jan. 28, 1936

2,029,003

UNITED STATES PATENT OFFICE

2,029,003

ART OF DENTISTRY

Harry Spiro, Chicago, Ill.

Application June 15, 1933, Serial No. 675,978

6 Claims. (Cl. 32—32)

This invention relates to improvements in the art of dentistry and applies, more especially, to dental bridge construction, the methods and steps practiced in the making of bridges and articulators used for this purpose.

Among the features of my invention is the provision of an articulator having two trays for supporting both a functional bite cast and a centric bite cast.

There are also numerous improvements in the construction and operation of my new articulator that will become apparent as I proceed with my specification.

Another feature of my invention is the making of a functional bite cast and using the same for forming the bridge. In this manner a bridge can be constructed completely in the laboratory before being placed in a patient's mouth. Heretofore, bridges ordinarily have been formed with respect to a centric bite only in the laboratory; and then had to be reshaped or altered in the patient's mouth in order to adapt the same to a functional bite. By making a functional bite cast and a centric bite cast, the bridge can be entirely completed in the laboratory. My improved articulator is adapted to support these casts so that the same may be employed in making the bridge.

Other features and advantages of my invention will appear more fully as I proceed with my specification.

In the accompanying drawings I have shown my improved articulator and illustrated the various aspects of my invention. As shown in these drawings—

Figure 1 is a top plan view of the articulator; Fig. 2 is a view in side elevation; Fig. 3 is a view taken as indicated by the line 3 of Fig. 2; Fig. 4 is a view taken as indicated by the line 4 of Fig. 2; Fig. 5 is a vertical sectional view; Fig. 6 is a view showing a centric bite on wax; Fig. 7 is a view taken as indicated by the line 7 of Fig. 6; Fig. 8 is a view showing a centric bite cast in place on the articulator; Fig. 9 is a view of a functional bite in wax; Fig. 10 is a view taken as indicated by the line 10 of Fig. 9; Fig. 11 is a view of the functional bite cast on the articulator; Fig. 12 is a view showing a step in the making of the bridge; Fig. 13 is a view taken as indicated by the line 13 of Fig. 12; Fig. 14 is a view similar to Fig. 11 showing the bridge more nearly formed; Fig. 15 is a view in front elevation of the wax impression from which the bridge is formed; Fig. 16 is a bottom view of the same; and Fig. 17 is a view of the bridge substantially completed.

As shown in the drawings, 10 indicates a rectangular base provided with a supporting post 12 at one end, said post having a head 12^a countersunk in the base 10. On the post 12 is a sleeve 11 held in position by the set screw 11^a. The post 12 is provided with a keyway 12^b and the sleeve 11 is provided with a pin 11^d extending into this keyway to prevent rotation of the sleeve 11 on the post 12.

The upper end 12^c of the sleeve 11 has pivotally mounted thereon the centric bite tray 13. This pivotal mounting is accomplished by providing a collar 14 and bifurcating the end of the tray 13 to provide the two arms 13^a, 13^a which embrace the collar 14. A pivot pin 15 fastens the collar 14 to the part 12^c and also pivotally supports the tray 13 by extending through the arms 13^a, 13^a. The collar 14 is provided with an extension 14^a adapted to be engaged by the lower end of the adjusting screw 16 in the tray 13 to limit the downward movement of this tray.

Below the collar 14 there is provided another collar 17 having a pair of forwardly extending arms 17^a, 17^a between which is rotatably supported by the pin 19 the functional bite tray 21. The member 17 is provided with a pin 23 projecting into a socket in the upper end of the sleeve 11 to prevent horizontal swinging of the tray 21, except when the member 17 is lifted enough to remove the pin 23 from the socket. 24 indicates a spiral spring between the collars 14 and 17 yieldingly holding the latter down, on the top of the sleeve 11. 25 indicates a stop to limit the downward movement of the tray 21.

The base 10 is provided at its end opposite the post 12 with a standard 26, the upper surface of which is suitably marked, as indicated by 27, to make an impression in the cast carried by either of the trays. Such impression may be used in cooperation with the part 26 thereafter to insure proper registry and placing of the casts on the articulator.

In Fig. 5 I have shown a master cast 30 in place on the base. In making this cast, a pair of properly spaced dowels 31 are cast in the same. These dowels have projecting pins 32 with undercut portions 33. Suitable holes are provided in the base to receive the pins 32 and in said base there is also provided a sliding member 34 provided with keyhole slots 35. The slide 34 is placed in the position shown in Fig. 4 when the master cast with the dowels is placed in position on the base. It is then slid to the right to the position shown in Fig. 5, whereupon the keyhole slots engage in the undercuts 33 on the

dowels to lock the master cast firmly on the base 10.

Figures 6 and 7 are views of the mouth showing the taking of a centric bite in wax. In these views, the lower jaw or arch is indicated by 40, it being understood that these views may represent any part of either jaw or arch in which a bridge is to be installed. 41 and 42 may indicate the abutment teeth in the lower arch 40 which are to carry the bridge. The upper arch is indicated by 43 and 44, 44 indicate the teeth therein. In Figs. 6 and 7, 45 indicates a piece of wax in the patient's mouth in which a centric bite is being made. By centric bite is meant a bite without any sliding or swinging movement of the jaws. After taking the bite as shown in Figs. 6 and 7, the wax impression thereof, as indicated by 45, is placed on the master cast 30 mounted on the articulator as shown in Fig. 8, and a centric bite cast 46 is made on the tray 13. The tray is provided with holes 13a to make an interlock with the plaster 46.

After the centric bite cast has been formed, a functional bite is made in a similar manner. For example, as shown in Figs. 9 and 10, 50 may indicate wax in which a functional bite is being made. That is, the jaws are brought together and then moved sideways and swung back and forth relatively the same as would occur in the operation of chewing or grinding food between the teeth of the two jaws. I have referred to this as a functional bite, meaning that the jaws are not merely brought together but that the teeth are slid back and forth sideways and forwardly and backwardly to some extent in making the bite, as if food were being chewed or ground. This wax impression 50 of a functional bite is then placed on the master cast in the articulator, as shown in Fig. 11, and a functional bite cast 51 is cast on the tray 21, said tray likewise being provided with holes 21a to form a plaster lock.

After the formation of the centric bite cast and functional bite cast, the bridge structure is built up on the master cast with respect to said bite casts. For example, this may be done as illustrated somewhat in Figs. 12 to 17, inclusive. As here shown, porcelain facings 60 may be supported between the members 41a and 42a which are plaster models in the master cast of the abutment teeth 41 and 42. These facings 60, for example, may be held in position by a plaster matrix 61. A wax impression 62, as shown in Figs. 15 and 16, may then be formed on the master cast. This is formed in cooperation with the two bite casts. It will be seen that either bite cast may be swung down into normal position with respect to the master cast or swung upwardly or to one side to remove it out of the way. In swinging the cast into position, the normal position can always be ascertained by bringing the extension 27a of the cast into position on the top 27 of the standard 26. This will always determine the normal position of either bite cast with respect to the master cast 30. It will be seen, therefore, that the wax impression 62 may be built up with regard to both the functional bite cast and the centric bite case. When tional bite cast and the centric bite cast. When the wax impression has been completed, the same may be reproduced in permanent form in any suitable manner. For example, the bridge construction and support shown in my co-pending application, Serial No. 632,203, filed September 8, 1932, may be utilized. In Fig. 17, purely by way of example, I have shown crowns 81 and 82 attached to the ends of the bridge for supporting the same in the mouth on the abutment teeth 41 and 42.

While I have shown and described certain embodiments of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims, in which it is my intention to claim all novelty inherent in my invention as broadly as permissible, in view of the prior art.

What I regard as new, and desire to secure by Letters Patent, is:

1. In an articulator adapted to support a centric bite cast by means of a centric bite tray, a support for a master cast, and means for supporting a functional bite cast in normal position with respect to a master cast on said support.

2. An articulator as claimed in claim 1, in which the means for supporting the functional bite cast is swingably mounted on the articulator.

3. In an articulator adapted to support a centric bite cast by means of a centric bite tray; a base; means for supporting a master cast on the base; and a tray supported from said base, said tray adapted to carry a functional bite cast.

4. An articulator as claimed in claim 3, in which the tray supported from the base is swingably mounted to swing in a horizontal plane.

5. In an articulator adapted to support a centric bite cast by means of a bite cast tray; a base adapted to support a master cast; a post on said base; a registry device on said base spaced from said post; and means on said post for supporting a functional bite cast with a portion of said cast in cooperation with said registry device.

6. In an articulator adapted to support a centric bite cast by means of a centric bite tray; a base adapted to support a master cast; a post on said base; and a functional bite cast tray carried by said post, said tray being vertically and horizontally swingable on said post.

HARRY SPIRO.