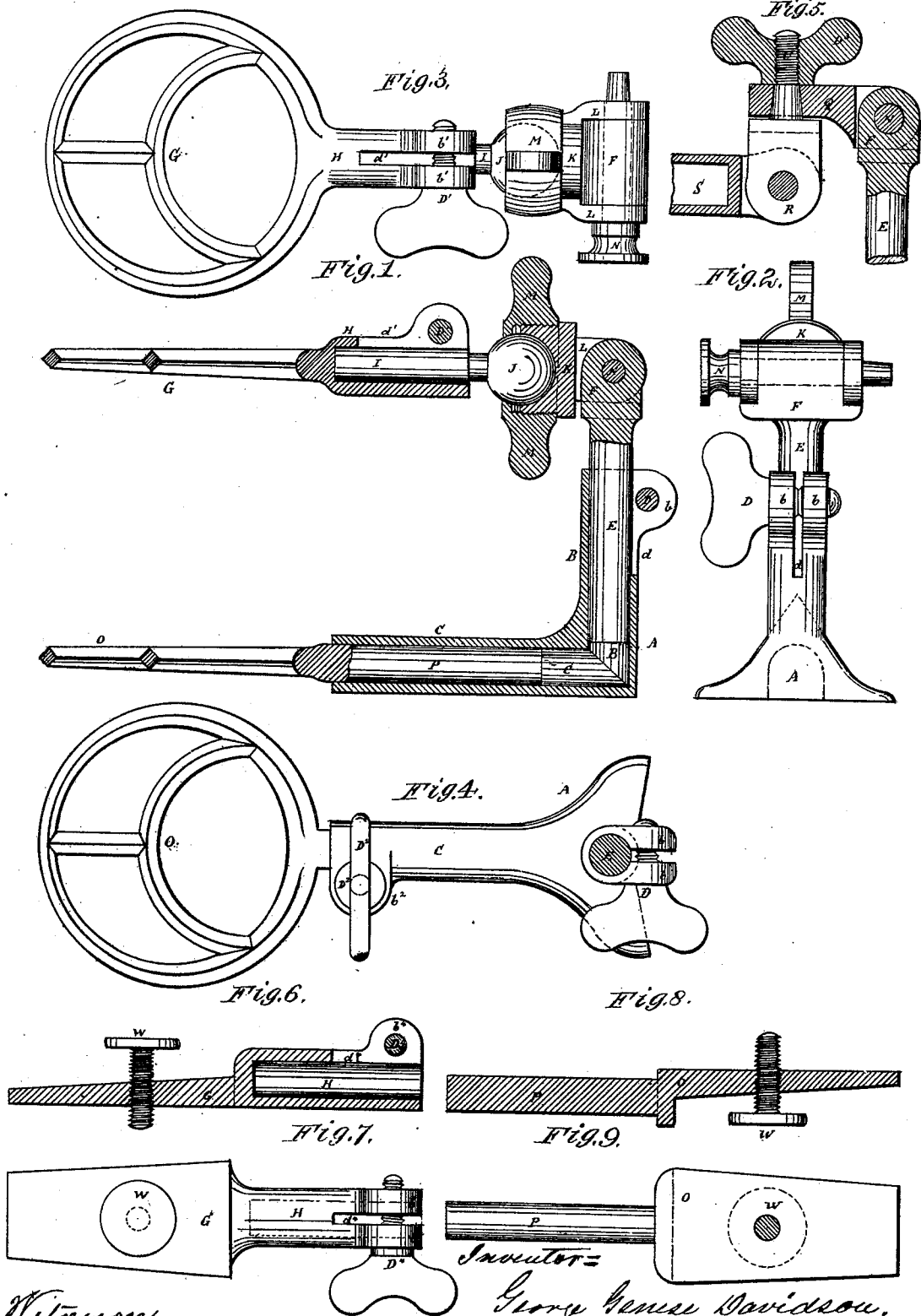


G. G. DAVIDSON.
DENTAL ARTICULATOR.

No. 175,046.

Patented March 21, 1876.



Witnesses
At Home
J. G. Grooms

George Venus Davidson.
By his Attorney-
James L. Morris

UNITED STATES PATENT OFFICE.

GEORGE G. DAVIDSON, OF LAMBETH, GREAT BRITAIN.

IMPROVEMENT IN DENTAL ARTICULATORS.

Specification forming part of Letters Patent No. 175,046, dated March 21, 1876; application filed February 17, 1876.

To all whom it may concern:

Be it known that I, GEORGE GENESE DAVIDSON, of 415 Old Kent Road, in the Borough of Lambeth, in the United Kingdom of Great Britain and Ireland, have invented certain new and useful Improvements in the Construction of Dental Articulators, of which the following is a specification:

My invention has for its object to provide an instrument of the kind known as dental articulators, by means of which any dentist or dental operator may fix the casts or models of a patient's jaws in a position corresponding to that of the jaws themselves, and having done so, turn or revolve these models in every possible direction, also remove the holders of the models from the instrument and replace them at any angle or in any direction required; to enable the models mounted on the holders to be worked upon by any operator in the absence of the patient, and the whole of the dentist's work to be accomplished with greater facility than by any of the methods at present in use of fitting artificial teeth to models; each of the component parts of the instrument being separable from the remaining parts or organs, and the whole of them being so arranged as to enable the operator to place the two models in any correlative position to one another that may be required for dental work.

First, my invention consists in a supporting-stock, carrying a sliding rod, to the upper end of which is pivoted a movable socket, in combination with a sliding rod carrying the model-holders, and provided with a ball fitting in the swinging socket, as hereinafter more fully set forth.

Second, in the combination with the stock provided with horizontal and vertical tubes, the latter tubes being provided with suitable lugs and adjusting-screws, of the sliding rod, provided with a swinging socket, and the rod carrying the model holders, and provided with a ball fitting in said socket and a nut for confining the ball in position, as hereinafter set forth.

In the accompanying drawings, Figure 1 is a longitudinal section of my improved dental articulator, furnished with a ball-and-socket joint. Fig. 2 is an end view of the same.

Fig. 3 is a plan of the same apparatus, showing the upper model-holder, and Fig. 4 a sectional plan, showing the lower model-holder. Fig. 5 is a longitudinal section of a hinge-joint, equivalent to the ball-and-socket joint, Figs. 1 to 3. Figs. 6, 7, and 8, 9 are elevations and plans of the upper and lower model-holders, respectively, in a modified configuration.

In Figs. 1, 2, 3, and 4, A is the stock or stand consisting of two tubes, placed at right angles to one another. The vertical tube B I furnish with two lips or lugs, *b*, separated from each other by a slit, *d*, and which may be brought close to one another by means of a thumb-screw or similar appliance, D. Within this tube there is a rod, E, surmounted by a head-piece, F, and which may be fixed at any height by means of the binding-screw D. G is the holder or suspender for the model of the upper jaw. It is furnished with a tube, H, having a pair of lips, *b'*, a slit, *d'*, and a binding-screw, D', to it, like the tube B. This tube H slides upon a rod, I, and its position is adjustable by means of the screw D'. The rod I ends in a ball, J, held within a socket, K, furnished with a fork, L L, fitted to the head F of the rod E, upon which the whole socket is thus suspended by means of the axis N, the ball itself being adjusted in the position required within the socket by means of the female screw M.

The holder O of the model of the lower jaw is similar to the top model-holder or suspender G, but furnished with a rod, P, sliding within the horizontal tube C of the stock or stand A. To enable the holder O to have a longitudinal sliding motion imparted to it, and to be fixed in any desired position, it is furnished with a pair of lips, *b²*, and a binding-screw, D², like the suspender G. Instead of the suspender G being furnished with a tube and sliding upon a rod, it may have a rod to it sliding within a tube ending in the ball J; and similarly, by way of interchange, the lower model-holder may have a tube to it and slide upon a rod, instead of having a rod attached to it which slides within the tube C.

By the arrangement just described it will be seen that each of the organs of my improved dental articulator has a movement of

its own. The suspender G, with the upper model fitted to it, may slide to and fro on the rod I and also rotate or gyrate, so that it may be placed at any angle to the vertical plane passing through the axis of the rod I. The rod I may vary its positions indefinitely by virtue of the ball-and-socket arrangement J K. The socket K may describe any arc around the axis N on which it is suspended, and to the vertical rod E to which the fork L of the socket K is fitted, both a longitudinal and an angular motion may be imparted, in the same manner as to the suspender G. The same duplex motion may be given to the lower model holder O, sliding within the tube C and adjustable at any angle. In this manner any one point of either of the two models may have its co-ordinates varied indefinitely.

Both model-holders, G and O, being separable from the stock or stand A and from the rest of the instrument, the models, mounted thereon and held together by means of wax or other agglutinating material, may be readily transferred to another instrument, and thus the same apparatus may do service for several fresh sets of models without the old ones being taken off their holders. For the rod E (shown in Fig. 1) another of greater length may be substituted, so as to become applicable to different heights of models, as made by different dentists.

For the ball-and-socket arrangement shown in Figs. 1, 2, 3, any description of mechanism may be substituted by means of which an analogous combination of movements is achieved. Fig. 5 shows a longitudinal section of a hinge-joint exemplifying these mechanisms. Upon the head F of the rod E a fork-piece, L, is mounted in the same way as in Fig. 1. To this fork-piece an eye, Q, is fitted, carrying a fork, R, on which the rod I, Fig. 1, or an equivalent tube, S, may be suspended. In this case the rod I or the tube S moves up and down around the center T of the fork-piece R, which rotates or gyrates horizontally around its axis U, secured by means of a set-screw, D³, and forming likewise the center of the eye or lug, Q, which may be moved up and down like the rod I or the tube S.

In those cases in which the rotary motion of the tubes around the axes of the rods, or vice versa, may not appear essential, and where it may be expedient to sacrifice this feature for the advantage of being able to fix the organs at once in the position required, I substitute prismatic bars for the rods shown in Figs. 1

to 4, and I form the tubes of a corresponding cross-section, so that these bars shall be capable only of a longitudinal motion; but on the other hand the fixing-gear *b D d* may be dispensed with, although a fastening-screw may be preserved. In the same manner, a rack and pinion may be substituted for the tube and slide or bar arrangement, and a worm-wheel and screw may also be employed for producing the longitudinal motion and fixing the model-holders in their proper places without any extra appliance.

For the circular form of the model-holders, Figs. 3, 4, a longitudinal—that is to say, cylindrical, prismatic—or other suitable form, may be substituted. A longitudinal section and a plan of an upper model-holder of this kind are shown in Figs. 6 and 7, respectively, and of a lower model-holder in Figs. 8 and 9, respectively. In both cases the body of the model-holder is so formed that the models may be cast thereon directly. A set-screw, W, is also provided, around which the molded material gathers, and which, being withdrawn by means of a screw-driver or key, allows of the model being removed from the holder and another substituted in its place. These model-holders may also be fitted with rods or with tubes *ad libitum*, and in combination with them prismatic bars and corresponding tubes may likewise be used, as well as racks and pinions, worm-wheels and screws, or analogous appliances.

Having thus described my invention, I wish to be understood that what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the stock A, the sliding rod E, the socket K pivoted on the sliding rod I, having a ball, J, fitting in the socket K, and the model-holders G and O, all substantially as and for the object specified.

2. The combination of the stock A, provided with the horizontal tube C and vertical tube B, having the lugs *b* and adjusting-screw D passing through the same, with the sliding rod E having the head F, the socket K pivoted in said head, the rod I having a ball fitting the socket K, the nut M confining the ball in place, and the model-holders G and O, all substantially as described.

GEORGE GENESE DAVIDSON.

Witnesses:

J. T. DANN,

1 Crawshaw Road, Brixton S. W.

SAMUEL CHALLEN GREENFIELD,

59 Treherne Road, Brixton S. W.