D. ROBERTS.

DENTAL ARTICULATOR.

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1,096,195.

Patented May 12, 1914.

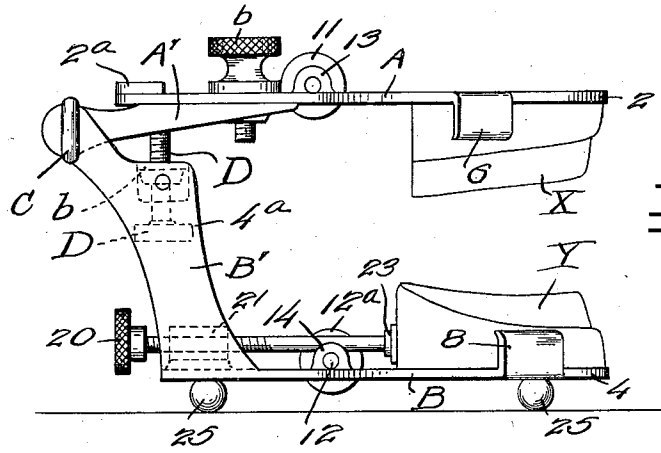


Fig. 1.

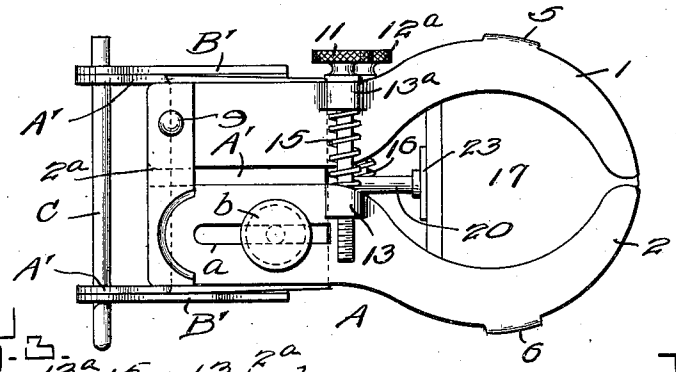


Fig. 2.

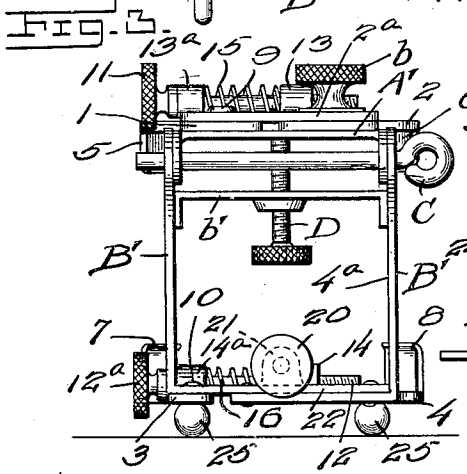


Fig. 3.

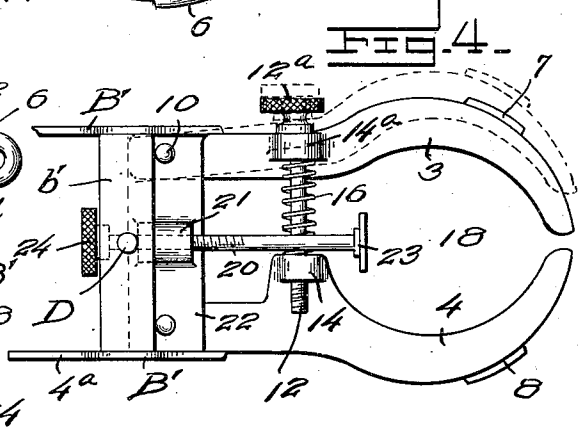


Fig. 4.

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DENTAL ARTICULATOR.

1,096,195. Specification of Letters Patent. Patented May 12, 1914.

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To all whom it may concern:

Be it known that I, DIXIE ROBERTS, a citizen of the United States, residing at Arkansas City, in the county of Cowley and State of Kansas, have invented new and useful Improvements in Dental Articulators, of which the following is a specification.

This invention relates to dental articulators and has for its aim the provision of a device of this character which will embody many important improvements in respect to the means for securing the models to the jaw-frames of the articulator.

The device of the present invention is intended to overcome the disadvantages of the present commonly employed mode of securing the plaster models to the jaw-frames, which present mode consists in investing the jaw-frames with said models, without the introduction of any feature which would tend in any wise to destroy or minimize the advantages incidental to the use of a clamping action as compared with the present commonly employed method referred to. In a word, the present invention aims to provide a thoroughly practicable articulator wherein a clamping action is substituted for the referred to present mode of securing the models to the jaw-frames, the structure and correlation of the parts of the device being such as to satisfy exacting requirements incidental to dental articulators with respect to simplicity of construction, ready adjustment of the models, effective clamping of the models and other things peculiar to devices of this character.

In the accompanying drawings I have illustrated the preferred embodiment of my invention, but it will be understood that various changes may be made in the details and that the important features of the invention may be variously embodied without departing from the spirit of the invention or the scope of the subjoined claims.

In the accompanying drawings, wherein like characters of reference designate like parts in the several views:—Figure 1 is a side elevation of the articulator; Fig. 2 is a top plan view thereof; Fig. 3 is a rear end elevation thereof; Fig. 4 is a top plan view of the lower jaw of the articulator showing in full and dotted lines respectively the relatively adjustable parts of the jaw in their open and closed positions.

The upper jaw-frame of the articulator is as is usual preferably composed of two separately formed parts, to wit, a model-carrying part A and a frame A′ which supports said model-carrying part. The lower jaw-frame is as is usual preferably composed of a model-carrying part B and a frame B′ for supporting said model-carrying part. These two frames are pivotally connected together by suitable means, as the cross shaft C for example, whereby the upper frame A, A′ may swing on a horizontal axis toward and away from the lower frame B, B′, as usual in this class of devices. It will be understood that these frames carry the plaster-of-Paris models, which are designated X and Y respectively, and said models are effectively clamped upon the respective portions A and B by the means hereinafter described. An adjustable stop carried by one of these frames, suitably near the pivot shaft C, and engaging a suitable part of the other frame is employed to adjustably regulate the distance of approach of the upper frame toward the lower frame. This stop preferably consists of a headed screw D having a threaded engagement with a transverse bar *b′* at the rear end of the lower frame-member B′ and engaging the under side of the member A′, of the upper frame, near the rear end of the latter. Suitable provision is made for pivotally adjusting the upper jaw-frame laterally and for varying its length in order to adjust the upper model to the lower model to accord with the "bite" of the patient, and for securing the parts of said frame in adjusted position. These results are preferably secured, as usual, by forming one of the parts of the upper frame, the part A, for example, with a longitudinal slot *a* through which a set screw *b* extends, said set screw being threadably engaged with the other part, A′ and serving as a clamping screw and as a pivot. As thus far described the present articulator does not and need not differ essentially from dental articulators already in use.

The model-carrying parts A and B of the jaw-frames are each divided longitudinally, whereby each of said frames has two members, hereinafter, for convenience, called "arms." The arms of the upper jaw-frame are marked 1 and 2 respectively and the arms of the lower jaw-frame are marked 3 and 4 respectively. The arms of each frame are mounted for relative pivotal adjustment toward and away from each other and are provided with projecting lugs or flanges

which engage the opposite longitudinal edges of the models. The flanges of the upper arms are marked 5 and 6 and those of the lower arms are marked 7 and 8. In practice, it is preferred that one of the arms of each jaw-frame be fixed and the other movable toward and away from the same. In the accompanying drawings the arms 1 and 3 are each pivoted to swing upon a vertical axis, the axes of such pivotal movement being indicated at 9 and 10 respectively; and the arms 2 and 4 are fixed against movement toward or away from the arms 1 and 3. For adjusting the arms 1 and 3, adjusting screws 11 and 12 are preferably employed, said adjusting screws preferably extending through bosses 13, 13ª and 14, 14ª, projecting from the arms, these screws having threaded engagement with certain of the bosses through which they extend, the bosses 13 and 14, for example. It is also preferred to subject the pivoted arm to spring action in one direction, the adjusting screws 11 and 12 of the arms acting against the tendency of the springs. In practice, this spring action is preferably in a direction which tends to press the pivoted arms away from the fixed arms, and it is also preferred in practice to employ coiled springs, as 15 and 16, for example, to give the spring action referred to, said coiled springs being preferably mounted on the respective adjusting screws 11 and 12 and bearing against the bosses.

The arms 1 and 2 preferably have their confronting faces cut away in order to provide a space, 17, between them, and similarly the arms 3 and 4 preferably have their confronting faces cut away to provide a like space, 18. By thus cutting away the arms the area of contact between the flat sides of the models and said arms is reduced, thereby correspondingly reducing the extent of the portion of said flat sides which need to be trimmed to fit the arms: it being apparent that as the models must set perfectly on the frames any decrease in the area of the contacting surfaces of the models and arms correspondingly reduces the extent of trimming necessary to produce a perfect contact.

It should be understood that while it is not wholly essential to the invention, considered in its broader aspects, to have one of the arms of each frame fixed against pivotal movement relatively to the other arm of its frame, yet this is very greatly preferred for the reasons that important advantages as regards simplicity of construction and prevention of lateral dis-arrangement of the upper and lower models from their proper relative positions according to the "bite" of the patient is assured by having one clamping lug of each pair of such lugs fixed against any lateral movement or adjustment, it being apparent that if both lugs of each pair have movement toward each other in clamping the model the tendency to move said model from its proper lateral position with relation to the other model will be pronounced and that this objection is overcome, as well as the structure simplified by providing one fixed arm with a lug projecting therefrom.

In the preferred embodiment of the invention the fixed arm 4 (of the lower frame) is integral with the adjacent condyl member 4ª of said frame; and the arm 2 of the upper frame is provided with a lateral extension 2ª at its rear end to which the arm 1 of said frame is pivoted at the point 9. It is also preferred to mount the lower frame B on separated feet, 25, which will lift it sufficiently to give free access to the head 12ª of the adjusting screw 12, so as to facilitate the adjustment of the pivoted arm of said lower frame and enable said adjustment to be conveniently made without raising the articulator from its support.

I prefer to employ an adjustable back-stop for resisting any tendency of the lower model Y to move rearward after it has been clamped. Such back-stop is not essential to my invention but when employed preferably consists of a longitudinally adjustable screw 20 having threaded engagement with a boss 21 carried by a transverse member 22 of the frame B′ and provided at its front end with a lug 23 for engaging the rear end of the model Y and at its rear end with a milled head 24 for convenience in adjusting it.

Having thus described the invention what I believe to be new and desire to secure by Letters Patent, is:—

1. A dental articulator comprising a jaw-frame having a model-carrying member which is divided longitudinally to provide arms, said arms having projections to engage a model upon the frame, and being mounted for relative pivotal adjustment, laterally, to clamp and release the model, and adjusting and holding means therefor.

2. A dental articulator comprising a jaw-frame having a model-carrying member which is divided longitudinally to provide arms, one of said arms being fixed and the other pivoted, said arms having projections to engage opposite sides of a model upon said frame, and adjusting and holding means connected with the pivoted arm for moving it toward and away from the fixed arm to thereby clamp and release the model.

3. A dental articulator comprising a jaw-frame having a model-carrying member which is divided longitudinally to provide arms, said arms being mounted for relative pivotal adjustment, laterally, projections from said arms to engage the model, means tending to move the arms relatively to each other, and adjustable means acting in opposition to the latter.

4. A dental articulator comprising a jaw-frame having a model-carrying member which is divided longitudinally to provide arms, said arms being mounted for relative pivotal adjustment, laterally, projections from said arms to engage the model, a spring tending to move the arms relatively to each other, and an adjusting screw acting in opposition to said spring.

5. A dental articulator comprising a jaw-frame having a model-carrying member which is divided longitudinally to provide arms, projections from the arms to engage opposite sides of the model, one of said arms being fixed and the other pivoted, a spring tending to move the pivoted arm relatively to the fixed arm, and an adjusting screw acting in opposition to said spring.

6. A dental articulator comprising a jaw-frame having a model-carrying member which is divided longitudinally to provide arms, projections from the arms to engage opposite sides of the model, one of said arms being fixed and the other pivoted, said arms having bosses, an adjusting screw extending loosely through the boss of one arm and having threaded engagement with the boss of the other arm, and a coiled spring mounted on said screw and between said bosses and tending to move the pivoted arm relatively to the fixed arm, the adjusting screw acting in opposition to said spring.

7. A dental articulator comprising a jaw-frame having a model-carrying member which is divided longitudinally to provide arms, projections from the arms to engage opposite sides of the model, one of said arms being mounted for pivoted adjustment relatively to the other to clamp and release the model, adjusting and holding means connected with the pivoted arm, and an adjustable back-stop for engaging the rear end of the model.

8. In a dental articulator, a lower jaw-frame one of whose condyl members is provided with a forwardly extending arm fixedly connected thereto, a second arm pivoted to said frame, said arms having projections to engage the model, and an adjusting and holding means connected with the pivoted arm.

9. In a dental articulator, a lower jaw-frame comprising condyl members, a transverse member connecting the condyl members with each other at the lower end of said frame, an arm fixedly connected at its rear end to one of said condyl members and projecting forward therefrom, a second arm having pivotal connection at its rear end with the other condyl member, projections from said arms to engage the side of a model and an adjusting and holding means for the pivoted arm.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

DIXIE ROBERTS.

Witnesses:
C. J. STOCKMANN,
CHARLES LOWELL HOWARD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."