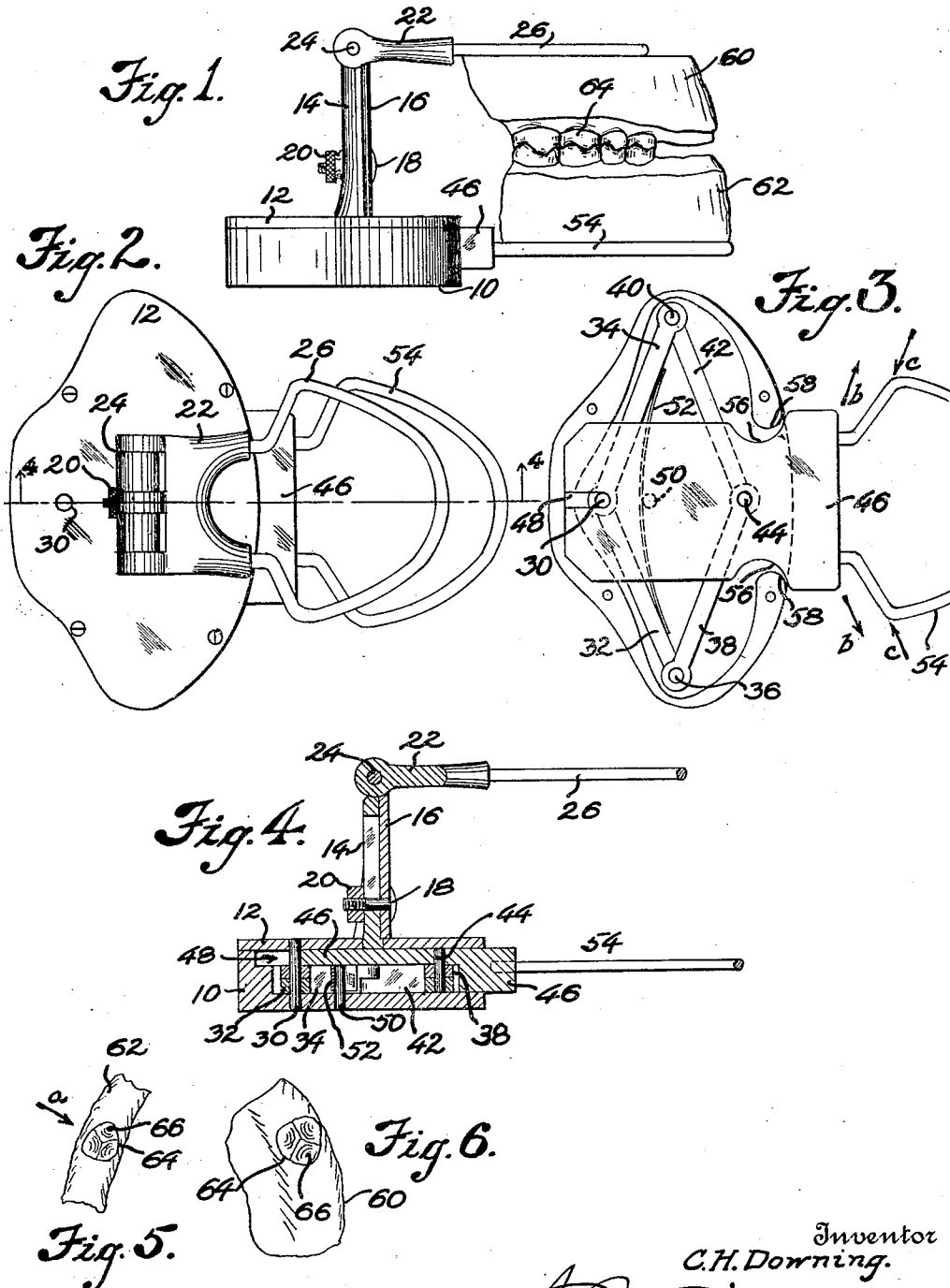


C. H. DOWNING.  
ARTICULATOR.  
APPLICATION FILED AUG. 16, 1919.

1,372,012.

Patented Mar. 22, 1921.



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# UNITED STATES PATENT OFFICE.

CHARLES H. DOWNING, OF EVANS, COLORADO.

## ARTICULATOR.

1,372,012.

Specification of Letters Patent.

Patented Mar. 22, 1921.

Application filed August 16, 1919. Serial No. 317,998.

*To all whom it may concern:*

Be it known that I, CHARLES H. DOWNING, a citizen of the United States, residing at Evans, county of Weld and State of Colorado, have invented certain new and useful Improvements in Articulators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide a dental articulator by means of which the natural motions of the lower jaw in chewing may be duplicated.

Briefly, the invention comprises a pair of jaws mounted upon a casing, means being provided for bodily adjusting one jaw toward and away from the other. The lower jaw is connected with mechanism mounted within the casing, which permits a movement of the jaw outwardly and laterally. This mechanism comprises a series of four arms pivotally connected and controlled by a spring, one of the pivot connections being fixedly mounted in the casing.

In the drawings:

Figure 1 is a side elevation showing the device in use.

Fig. 2 is a plan.

Fig. 3 is a view similar to that of Fig. 2 with the top of the casing and the upper jaw removed to show the mechanism within the casing.

Fig. 4 is a vertical section on the line 4-4 in Fig. 2.

Figs. 5 and 6 are respectively fragmentary views of lower and upper plates with which the articulator is to be used.

The articulator comprises a casing 10 provided with a cover 12, having an upstanding post 14 on which an adjustable member 16 is mounted and adapted to be retained in adjusted relation by means of a bolt 18 and a nut 20. A broad piece 22 is pivoted to the member 16 at 24 and carries a jaw 26.

A fixed pin 30 extends through the casing and through the cover and has pivoted thereon a pair of arms 32 and 34. To the arm 32 there is pivotally connected at 36 an arm 38; and to the arm 34 there is pivotally connected at 40 an arm 42, these two

arms being pivoted on a pin 44 which passes through a block 46. The block 46 at its outer end slides between the cover 12 and the bottom of the casing 10. Its inner end is provided with a slot 48 in which the pin 30 is adapted to travel. The pin 50 is mounted in the bottom of the casing 10 and projects upwardly to retain a long leaf spring 52, the ends of which engage the outer portions of the arms 32 and 34. The spring 52 maintains these arms under tension and normally holds the mechanism just described in the position in the casing as shown in Fig. 3. Here the four arms form a diamond-shaped figure.

The outermost end of the block 46 carries a lower jaw 54. The sides of the block 46 are cut out to form bearing or cam faces 56, adapted to engage and slide upon the curved adjacent walls 58 of the casing 10. The upper jaw 26 is adapted to have an upper plate 60 secured thereto and the lower jaw to have a lower plate 62 secured thereto. These plates carry teeth 64, which have cusps 66, and these teeth are located upon the plates at angles, as shown, so that the cusps of one tooth will fit in the depressions of an opposing tooth, and so that the teeth will move without interference of the cusps in the direction of the normal chewing motions indicated by the small arrow *a* in Fig. 5.

The articulator is designed to duplicate this motion. The block 46 may be drawn out toward either side and will take the direction indicated by the small arrows *b* as indicated in Fig. 3. When released, the spring 52 will return the mechanism and it will take the direction of one of the arrows *c*, this direction corresponding with that indicated by the arrow *a* in Fig. 5.

From the foregoing, it will be seen that as the jaw 54 and its lower plate 62 are drawn out, the movement in the direction of the arrows *b* will correspond with that of the human jaw when it is projected forwardly and laterally in the normal chewing process, and that the return movement in the direction of arrows *c* will be the same as that of the return movement of the human jaw. Thus, by using this device, the teeth may be properly located on the plates to prevent interference of the cusps for chewing operations.

The adjustable parts 14 and 16 permit the

jaws 26 and 54 being positioned in parallel relation, regardless of the size of plates 60 and 62.

I claim:

5 1. An articulator, comprising a casing, a jaw mounted on the casing, a second jaw having a member extending within the casing, the second jaw being capable of movement outwardly and laterally, and means to  
10 return said jaw to normal position.

2. In an articulator, upper and lower jaws, a casing, arms pivoted together within the casing, one of said pivots being fixed, a spring to retain said arms in normal position within the casing, and a block connected with said arms and carrying the  
15 lower jaw.

3. An articulator, comprising a casing, a jaw mounted on the casing, a plurality of  
20 arms pivoted together within the casing, a fixed pivot with which said arms are connected, a block pivoted to said arms and projecting from the casing, and a second jaw mounted on said block and spaced from  
25 the first jaw.

4. An articulator, comprising a casing, a jaw mounted on the casing, a plurality of arms pivoted together within the casing, a fixed pivot with which said arms are connected, a block pivoted to said arms and projecting from the casing, and a second jaw mounted on said block and spaced from the first jaw, said block having a cam face adapted to engage the adjacent side of the casing to permit lateral and forward motion of said second jaw.  
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5. An articulator, comprising a casing, a jaw mounted on the casing, a plurality of arms pivoted together within the casing, a

fixed pivot with which said arms are connected, a block pivoted to said arms and projecting from the casing, and a second jaw mounted on said block and spaced from the first jaw, said block being slidable on a fixed point.  
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6. An articulator, comprising a casing, four arms pivoted together within the casing to form a four-sided figure and mounted on a fixed pivot, a block pivoted to said arms and projecting from the casing, and a jaw  
45 mounted on said block.

7. An articulator, comprising a casing, four arms pivoted together within the casing to form a four-sided figure and mounted on a fixed pivot, a block pivoted to said arms and projecting from the casing, and a jaw  
50 mounted on said block, said block having a cam face adapted to engage the adjacent side of the casing to permit lateral and forward motion of said jaw.  
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8. An articulator, comprising a casing, four arms pivoted together within the casing to form a four-sided figure and mounted on a fixed pivot, a block pivoted to said arms and projecting from the casing, and  
60 a jaw mounted on said block, said block being slidable on said fixed pivot.

9. An articulator comprising a casing, a jaw mounted on the casing, a second jaw having a member extending into the casing  
65 and a plurality of movable devices having connection with said member, capable of permitting bodily movement of said second jaw outwardly and laterally.

In testimony whereof I affix my signature  
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CHARLES H. DOWNING