C. E. LUCE.

ARTICULATOR FOR MAKING ARTIFICIAL DENTURES.

APPLICATION FILED SEPT. 28, 1910.

1,009,912. Patented Nov. 28, 1911.

Fig. 1.

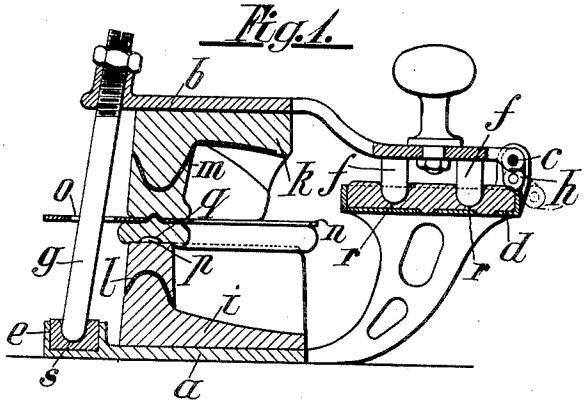


Fig. 2.

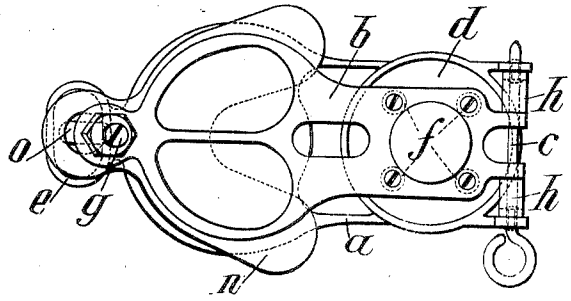
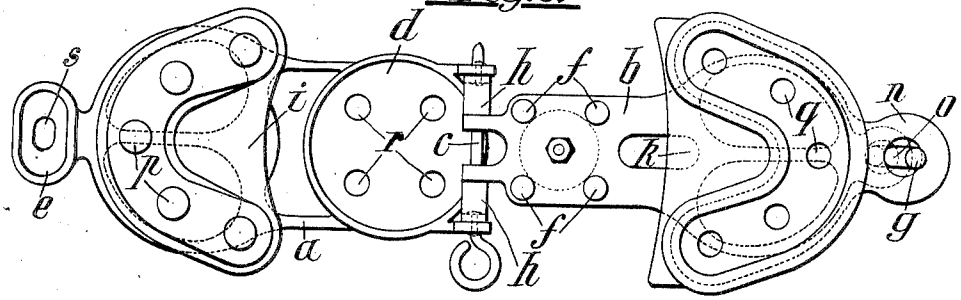


Fig. 3.



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ARTICULATOR FOR MAKING ARTIFICIAL DENTURES.

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To all whom it may concern:

Be it known that I, CHARLES E. LUCE, a citizen of the German Empire, residing at Stuttgart, in the Kingdom of Wurttemberg, Empire of Germany, have invented certain new and useful Improvements in Articulators for Making Artificial Dentures; and I do hereby 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.

This invention relates to an improved articulator for making artificial dentures and the essential feature of the invention consists in forming the denture in exact accordance with the masticating movements of the person for whom the denture is intended. In order to attain this result, the following method is adopted: The two parts of the articulator are pivotally mounted on one another which is itself already known, and the jaw molds and temporary plates are made in the ordinary way employing the straight bite. For the purpose of transferring or recording the actual masticatory movements of the patient, the jaw plates are inserted in the mouth and the patient induced to make the actual masticatory movements, the teeth being already inserted in one jaw mold, and by means of these masticatory movements is transmitted as corresponding indentations to the other jaw mold. A bite plate may also preferably be inserted between the two jaw plates, and onto this plate, which is provided with a plastic substance, the masticatory movements are transferred as corresponding indentations. Now in order that these masticating movements after the molds have been again removed from the mouth of the patient may also be so exactly imitated in the articulator, as in the mouth, the upper part of the articulator is connected with the lower part by means of an easily releasable hinge. A number of rounded pins projecting against the other part are also located on one part of the articulator in proximity to the hinge, which pins engage with a disk or tray symmetrically arranged on the other part, which disk is filled with any of the ordinary plastic substances. The ends of these pins make an impression in the substance of the tray or disk. After the hinge of the two parts of the articulator has been unfastened a lateral or masticating movement may be imparted to said parts, the indentations already formed in the bite plate serving as a guide for this movement. While this movement is being made, the pins make impressions in the disk and tray corresponding in shape to said masticating movement. A vertically adjustable guide pin is also provided on the front of one plate of the articulator, in order to further guide the two parts of the articulator when transmitting the masticatory movement, the lower end of which pin enters into the plastic substance on a disk arranged on the other part and there makes an impression which serves as a guide. An apparatus (articulator) serving for carrying out this method will now be described in one example of construction, with the reference to the accompanying drawings, in which:

Figure 1 is a median longitudinal section; Fig. 2, a plan view of the apparatus closed; and Fig. 3, a plan view of the apparatus opened.

This improved articulator consists of an ordinary lower plate *a* and upper one *b*, which are connected together by means of a releasable hinge *c* and serve for receiving a plastic substance, and a smaller plate or disk *e* is also provided at its front side for the same purpose. The upper plate *b* has a suitable number, for instance four, downwardly projecting rounded pins *f* lying symmetrically with the disk *d*, and its front end has a vertically adjustable guide pin *g*, which is preferably mounted somewhat at an inclination. In order that the two parts *a* and *b* of the articulator, may be able to execute relatively to one another a movement corresponding to mastication, the supporting members *h* of the hinge *c* are arranged so as to be turned down. The form of the lower jaw *i* and also that of the upper jaw *k*, which carry the temporary plates *l* and *m* respectively, and between which if desired a bite plate *n* may also be arranged, are the usual ones, only the supporting arm of the latter is further provided with an aperture *o* for the passage of the pin *g*. The plate *l* is also provided on its upper edge either with teeth or with a number of suitable projections *p* by means of which, when the plates *l* and *m* are bitten together, markings *q*, corresponding to the projections *p* are formed in the plastic mass *m*, or in the plate *n*, when said plate is employed. These markings serve as guides for

the masticating movement of the upper and lower plates *a* and *b* relative to each other, by which movement indentations *r* and *s* are produced.

The carrying out of the method and the handling of the improved apparatus is approximately as follows: When the jaw molds *i* and *k* and also the temporary plates *l* and *m* are ready, the latter, as shown in the drawings, are inserted in the mouth of the patient, if desired a bite or impression plate being inserted between them, and the patient is requested first to make an ordinary straight bite and then masticatory movements. Indentations *q* of a certain form which correspond to the movements executed, are thereby formed by the excrescences *p* of the plate *l* in the plastic mass of the plate *n*. The plates *l*, *m*, *n*, are then again removed from the mouth and together with the jaws molds *i* and *k* fixed in the parts *a* and *b* of the articulator. The disks *d* and *e* are then filled with a suitable plastic substance—impression material—and the upper plate *b* is then directly turned down on the lower one *a*, the pins *f* and the pin *g* pressing into the substance on the disks *d* and *e*, which corresponds to the straight bite. The hinge *c* is then released by its pin being withdrawn and the supporting members *h* are turned back, as shown in dotted lines in Fig 1. Now if the upper part *b* of the articulator be moved laterally and forward against the lower part in such a way that the excrescences *p* and the teeth follow the indentations *q* in the bite plate, the indentations *r* and *s* formed by the pins *f* and the pin *g* respectively in the plastic substances on the disks *d* and *e* assume forms which stand in a quite definite relation to the markings *q* in the biting plate, that is to say to the masticatory movements, so that even after the removal of the bite plate *n* and the hardening of the plastic substance on the disks *d* and *e*, the masticatory movements can be made, the indentations of these two disks serving as a guide. When this has taken place the substances on the disks *d* and *e* are allowed to set or harden. The plate *n* is then removed and the artificial teeth inserted in the ordinary way in the temporary plates *l* and *m*. If the lower plate *b* be moved in such a way that the pin *f* and the pin *g* of the upper plate follow the indentations *r* and *s* respectively of the lower plate, these movements are transmitted in turn to the teeth, from which it can be seen without further difficulty whether their position and form are correct, so that they may, if desired, be subsequently altered to correspond to the masticatory movements. By this method of recording the masticatory movements, artificial dentures for the exact natural reproduction of the masticatory movement of each individual patient may be obtained, which is of particular importance for such dentures.

What I claim is:

1. In an articulator, the combination of an upper part, a lower part, disks adapted to receive plastic material and carried by one of said parts, and rounded pins carried by the other part and adapted to form impressions in the plastic material to provide a guide-path for the transference of the masticatory movement.

2. In an articulator, the combination of an upper part and a lower part, means provided on the lower part for receiving plastic material, and an adjustable guide pin carried on the upper part forming an impression in the plastic material.

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

CHARLES E. LUCE.

Witnesses:

HERMANN WIETHÜCHTER,

FRANZ GAURZ.