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F. HEYDENREICH
ARTIFICIAL DENTURES
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Fig. 1

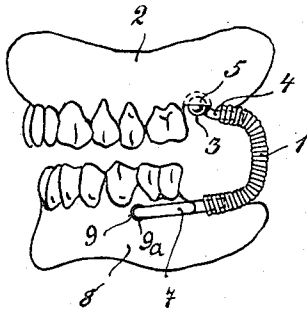


Fig. 3

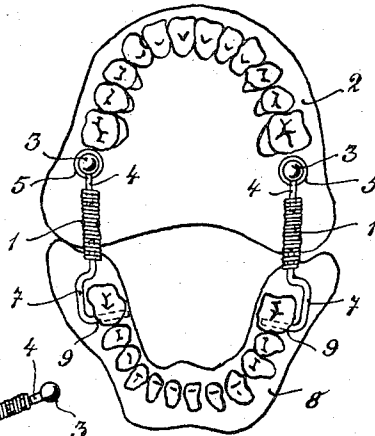


Fig. 2

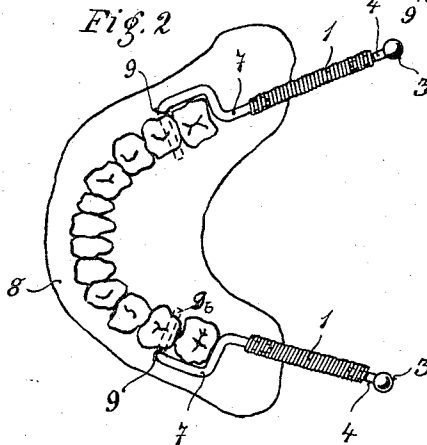
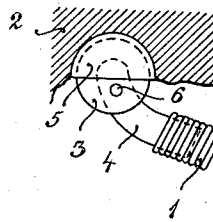


Fig. 4



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ARTIFICIAL DENTURES

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3 Claims. (Cl. 32—4)

Artificial dentures having upper and lower plates pivotally interconnected through rigid levers and having springs and hinges are already known.

The present invention is concerned with the structure of an artificial denture provided with resilient linkages arranged between the upper and lower plates and has as one of its main objects to provide means facilitating opening and closing movements of the denture to closely approximate the natural chewing movements of the upper and lower jaws, especially without exerting any irksome irritation and harmful rubbing on the gums or soft mucous membranes while avoiding the formation of dangerous pressure areas which would otherwise lead to even more dangerous gum inflammations.

A further object of the invention is to provide means substantially completely eliminating accumulation of food particles on or at the linkage or like mechanism, as well as greatly and readily facilitating removal of this mechanism from the denture plates or parts in a convenient and simplified manner so as to enable thorough cleaning thereof, as well as rapid and simple reassembly of said mechanism.

The invention resides in the fact that the bearings for the resilient linkages interconnecting the corresponding lateral portions of the denture parts are disposed in staggered relation to one another.

A further characteristic of the invention is the arrangement of two rigid parts acting in the manner of one-armed levers one of which is rotatably supported at one end in the lower denture part while its other end is connected to a spring element, which may be in the form of a coil spring and is supported by the upper denture part.

These and other objects of the invention will become further apparent from the following detailed description, reference being made to the accompanying drawing showing a preferred embodiment of the invention.

In the drawing:

Fig. 1 is a somewhat schematic side elevational view of a denture constructed in accordance with the present invention and shown in closed position;

Fig. 2 is a top plan view of the lower denture part and of the two resilient linkages connected thereto;

Fig. 3 is a top plan view of the denture showing the parts thereof in open position; and

Fig. 4 is an enlarged detail view of the connection between one of the aforesaid linkages and the upper denture part.

Referring now more particularly to the drawing, there are disclosed in accordance with the invention two resilient linkages comprising coil or helical springs 1 having their upper ends universally connected to the upper denture part 2 and rearwardly or behind the teeth thereof and in particular at respective points located along a linear extension of the center line of the row of teeth or tooth sockets, as shown. To this end, there are provided adjacent the upper ends of the springs 1 balls 3 each of which is fixedly connected to the respective spring 1 by means of a rigid rod element or extension 4. Each

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ball engages and is retained in a socket 5 fixed to the underside of the upper denture part 2, whereby the upper bearing support of the springs 1 resembles a natural linkage arrangement.

5 Preferably, the balls 3 are removably or interchangeably connected with the springs 1, this being effected by means of a removable pin 6 extending through each ball and the corresponding extension 4 (see Fig. 4).

A rigid element or lever 7 extends from each spring 10 1 at the lower end thereof along the outer border area of the row of teeth in the lower denture part 8 up to a bearing which is disposed in staggered relation to the corresponding universal joint 3—5 of the upper denture part. In other words, each bearing 9 is disposed forwardly of bearing 3—5 and relative to the front edge of the denture. Each lever 7 is bent at its foremost end 9b and engages with said bent or angle-shaped end in a transverse bore 9a of the lower denture part 8 (see Figs. 2 and 3) in which the respective lever 7 can rotate and move substantially without any friction. Thus, elements 7 and 3 form 20 a set of rigid elements between which spring 1 is connected in intermediate position.

In this manner the aforesaid bearing locations for the helical or coil springs 1 enable the denture parts to have 25 a mobility approximating to a great extent the movements of the natural jaws of a human being.

The invention further avouches that the denture parts 2 and 8 due to this particular structure are gently pressed against the jaws or gums so that undesired displacement of said parts is prevented and feared irritation or sore spots or sliding of the denture during chewing will be positively avoided.

The bearing of the springs by means of the ball and socket joints 3—5 enables the dentures and especially the 30 connecting means therefor to carry out small lateral give or movements which are generally unavoidable during chewing.

Due to the large path during opening movement of the two denture parts the springs will be practically 40 straightened out which entails the advantage that food particles will not adhere to or slip between the coils of these springs, but fall off automatically, thus rendering the use of the denture very convenient and pleasant.

Moreover, the aforesaid linkages can be released with 45 only two simple manipulations for thorough cleaning and for subsequent equally simplified reinsertion and assembly.

Because of the reliable predetermined pressing of the denture parts against the gums the provision of the upper 50 denture part 2 with a palate member or gum plate may be dispensed with which indubitably facilitates the use and application of the denture to the gums.

In this case, it is immaterial whether the springs are connected to the denture parts as shown in the drawing or whether these springs are connected in a reversed manner, i. e., by means of the ball and socket joints 3—5 to the lower denture 8 and by means of the bent levers 7 to the upper denture part 2.

In any event, the levers 7 permit enlargement of the 60 opening path of the denture so that the wearer thereof when laughing or yawning is safe against loosening or release of the denture, which, of course, entails a measure of great comfort and safety from embarrassment to said wearer.

It can thus be seen, that there has been provided according to the present invention a denture structure for 65 artificial teeth having upper and lower teeth carriers, which structure is characterized by bearing means, respectively, in said upper and lower carriers and located at the lateral ends of the latter, the said bearing means of said lower carrier being arranged in staggered relation 70 to said bearing means of said upper carrier, link means

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interconnecting said upper carrier with said lower carrier and including rigid elements.

Each of the spring elements 1 terminates at one end in a ball and at the other end in an angular end piece for engagement in said bearing means, whereby said balls and said end pieces may rotate in said bearing means during movements of said carriers, resilient means being provided for connecting respective elements at said lateral ends of said carriers.

Various changes and modifications may be made without departing from the spirit and scope of the present invention and it is intended that such obvious changes and modifications be embraced by the annexed claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent, is:

1. An artificial denture comprising upper and lower plates terminating in front edges and having upper and lower rows of teeth, respectively, a pair of sockets formed in said upper plate rearwardly of said upper row of teeth and in alignment therewith, bearing means provided for said lower plate under said lower row of teeth, the distance between said bearing means and the front edge of said lower plate being shorter than the distance between said sockets and the front edge of said upper plate, a first pair of rigid elements engaged in said sockets forming universal joints, a second pair of rigid elements having offset ends engaged in said bearing means, and a pair of helical coil springs each extending rearwardly in

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alignment with and along a linear extension of the centerlines of said upper and lower rows of teeth, said coil springs being each terminally secured to one rigid element of said first pair of rigid elements and to one rigid element of said second pair of rigid elements to permit opening and closing of said dentures while allowing lateral movements of said dentures.

2. An artificial denture according to claim 1, wherein said first pair of rigid elements includes a pair of balls having bores therein, a pair of rod elements received in said bores, and pin means detachably securing said rod elements to said balls, said balls being seated in said sockets.

3. An artificial denture according to claim 1, wherein said second pair of rigid elements includes a pair of levers each having a portion thereof forming linear extensions of said springs, said levers having ends received within said springs.

References Cited in the file of this patent

UNITED STATES PATENTS

1,467,079	Wilson	Sept. 4, 1923
2,666,988	Myers	Jan. 26, 1954

FOREIGN PATENTS

806,989	France	Oct. 5, 1936
429,637	Italy	Feb. 2, 1948