Nov. 6, 1951 M. D. HARRIS 2,574,180

PROSTHETIC DEVICES

Filed May 14, 1949

Fig. 1.

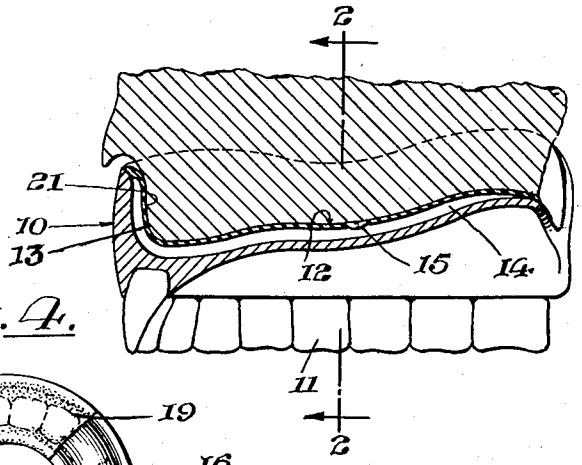


Fig. 4.

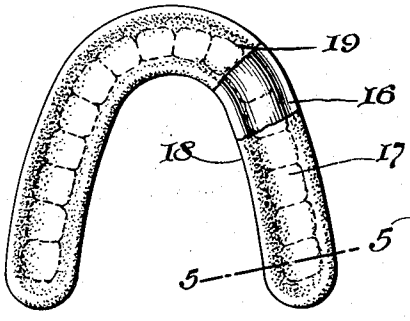
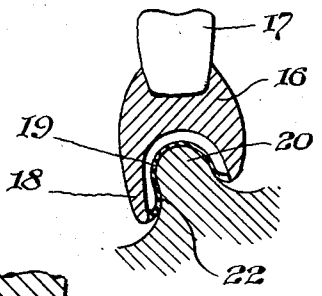


Fig. 2.

Fig. 5.



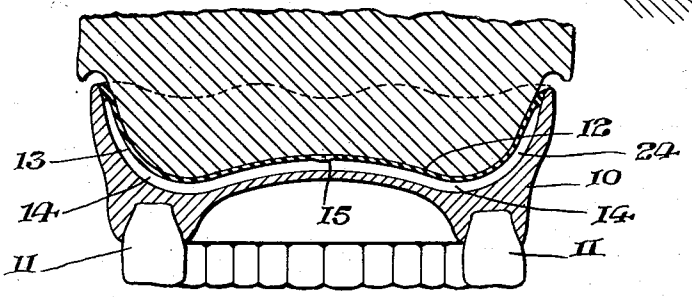
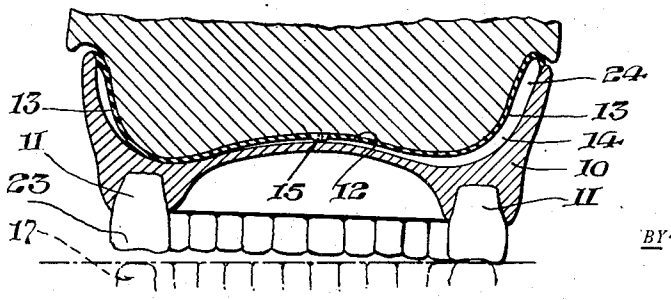


Fig. 3.



INVENTOR.
Martin D. Harris

BY Cousins & Cousins
ATTORNEYS.

Patented Nov. 6, 1951 2,574,180

UNITED STATES PATENT OFFICE

2,574,180

PROSTHETIC DEVICES

Martin D. Harris, Paterson, N. J.

Application May 14, 1949, Serial No. 93,267

10 Claims. (Cl. 32—2)

1

This invention relates to dentures, either full or partial, particularly those wherein artificial teeth are mounted on a plate of vulcanized rubber, plastic or the like.

Where it is necessary to provide dentures, the wearers thereof are frequently troubled by the loosening of the devices within the mouth. This difficulty is particularly noticeable during chewing at which times an unequal pressure may be placed upon the prosthetic device, causing it to separate from the mouth or gum structure supporting it.

Various attempts have been made to overcome this difficulty, such as providing small suction cups upon the denture adjacent the gums, and using various adhesive pastes and powders. Since the pressure exerted by the powerful jaw muscles is very great, none of the above-mentioned devices has proved satisfactory.

Accordingly, it is an object of this invention to provide a denture structure which will remain securely within the mouth under all the stresses of mastication and muscular and tissue pressure.

Another object of this invention is to provide a denture which will cling more firmly in place when unequal pressure is applied thereto.

A further object of this invention is to provide a denture assembly which will be more easily fitted initially and more comfortable to wear.

Another object of this invention is to provide a denture structure which will be adapted to utilize the contours of the upper and lower jaw structure to a very great degree, thereby increasing its adaptation.

A feature of this invention is its flexible diaphragm which compensates for denture displacement.

Another feature of this invention is the provision of a fluid or gas filled space beneath the diaphragm to improve the operation thereof.

A further feature of this invention is the use of the flexible diaphragm to extend into the undercut portions below jaw membrane and tissues to increase the adaptation of the denture within the mouth.

A feature of this invention is the provision of a valve to replace the fluid below the membrane in the event of leakage.

The invention consists of the construction, combination and arrangement of parts, as herein illustrated, described and claimed.

In the accompanying drawings, forming a part hereof, is illustrated one form of embodiment of the invention, in which drawings similar reference characters designate corresponding parts, and in which:

2

Figure 1 is a vertical section of a denture, according to this invention, shown with the upper mouth structure within which it is worn.

Figure 2 is a horizontal section taken on line 2—2 of Figure 1.

Figure 3 is a view similar to that shown in Figure 2, with the denture displaced as by a pressure applied to one corner thereof.

Figure 4 is a top plan view of a denture for the lower jaw, according to this invention.

Figure 5 is a sectional view taken on line 5—5 of Figure 4.

Referring to the drawings, and particularly to Figures 1 and 2, 10 indicates a conventional dental plate adapted for use in the upper portion of the mouth. Teeth 11 are provided in the said plate 10 in the well known manner. Immediately above the plate 10 and between the said plate 10 and the roof of the mouth 12, there is located a thin flexible diaphragm 13. This diaphragm 13 is secured to the plate 10 at its edges, as by vulcanizing, cementing or other suitable means. In this manner a space 14 is provided between the plate 10 and the diaphragm 13.

The space 14 may be suitably filled with air, a liquid or gas, such as helium, oxygen, etc., so as to provide a cushion between the mouth 12 and the plate 10 at all times. A valve 15 may also be included within the diaphragm 13, so that if the fluid escapes from the space 14, it may be refilled. Alternately, the fluid may be increased by means of the valve 15, to suit the comfort of the wearer.

The construction of the present invention, when used in conjunction with prosthetic devices for the lower jaw, is shown in Figures 4 and 5. The well known rigid plate 16 is used, said plate having teeth 17 affixed thereto. However, by reason of the present invention, the inner ridge 18 of the plate 16 may be extended well below the point where it is customarily located. The diaphragm 19 is secured along its edges to the underside of the plate 16, so that it will be adjacent the gums 20. The valve member 15 previously referred to in connection with the upper plate 10, may be incorporated into the lower plate diaphragm assembly.

The operation of the dentures herein described is as follows:

The prepared prosthetic devices are slipped into the mouth in the well known manner. The diaphragm 13 thereupon extends over the con-

dyles 21 and beyond the ridges into the tissue, increasing the hold of the denture upon the mouth structure. The portion of the diaphragm adjacent the roof of the mouth 12 adapts itself to the mouth, making an air free contact or perfect adaptation therewith. The diaphragm 19 on the lower plate 16 is similarly extended into the undercuts 22 below the ridges 20. It will be seen that increasing the pressure upon the dentures will cause the diaphragms 13, 19 to grasp the mouth structure supporting the dentures more firmly.

When the wearer of the dentures, made according to this invention, bites upon food at one side of his jaw, as is customary in chewing, there will be a tendency to spring the denture from the roof 12 and sides of the mouth. However, the force of the bite, as shown in Figure 3, will compress the fluid or gas within the space 14 adjacent the point of pressure 23. The fluid will then be forced into that portion of the space 14 which is relieved of pressure, such as is indicated at 24 in Figure 3. Accordingly, air will not be able to rush in behind the denture, and it will remain within the mouth adhering to the structure of the oral cavity by virtue of the expansion of the diaphragm.

The provision of the flexible diaphragm and its adaptability to the contours of the mouth structure supporting the dentures, decreases materially the time-consuming and painful process of fitting and getting accustomed to dentures.

It has also been found that the shape of the jaws changes constantly. The construction presently disclosed will alter itself in accordance with these variations, without the need for new dentures or refitting.

By using a denture construction according to this invention, it will be possible for a dentist to take an impression of the jaw, make the required denture, and fit the patient with the prosthetic device immediately after extraction. Moreover, the denture so supplied will be a permanent one, requiring no subsequent trimming or fitting.

Having thus fully described the invention, what is considered as new, and sought to be covered by Letters Patent of the United States, is:

1. A denture structure comprising, a plate member, a plurality of teeth carried by the plate member, a diaphragm secured to the said plate and adapted to lie between the entire mouth-conforming inner surface of the plate and the mouth of the wearer, said diaphragm being spaced from the plate member where not attached thereto.

2. A denture structure comprising, a rigid plate member, a plurality of teeth carried by the plate member, a diaphragm secured to the said plate and adapted to lie between the entire mouth-conforming inner surface of the plate and the mouth of the wearer, said diaphragm being spaced from the plate member where not attached thereto.

3. A denture structure comprising, a plate member, a plurality of teeth carried by the plate member, a flexible diaphragm secured to the said plate and adapted to lie between the entire mouth-conforming inner surface of the plate and the mouth of the wearer, said diaphragm being spaced from the plate member where not attached thereto.

4. A denture structure comprising, a plate member, a plurality of teeth carried by the plate member, a diaphragm secured at its edges to the said plate and adapted to lie between the entire mouth-conforming inner surface of the plate and the mouth of the wearer, said diaphragm being spaced from the plate member where not attached thereto.

5. A denture structure comprising, a plate member, a plurality of teeth carried by the plate member, a rigid diaphragm secured at its edges to the said plate as by vulcanizing and adapted to lie between the entire mouth-conforming inner surface of the plate and the mouth of the wearer, said diaphragm being spaced from the plate member where not attached thereto.

6. A denture structure comprising, a plate member, a plurality of teeth carried by the plate member, a diaphragm secured to the said plate and adapted to lie between the entire mouth-conforming inner surface of the plate and the mouth of the wearer, said diaphragm being spaced from the plate member where not attached thereto and a fluid carried within the said space.

7. A denture structure comprising, a plate member, a plurality of teeth carried by the plate member, a diaphragm secured to the said plate and adapted to lie between the entire mouth-conforming inner surface of the plate and the mouth of the wearer, said diaphragm being spaced from the plate member where not attached thereto and a suitable gas carried within the said space.

8. A denture structure comprising, a plate member, a plurality of teeth carried by the plate member, a diaphragm secured to the said plate and adapted to lie between the plate and the mouth of the wearer, said diaphragm being spaced from the plate member where not attached thereto, a valve carried by the diaphragm communicating with the space, and a fluid carried within the said space.

9. A denture structure comprising, a plate member, a plurality of teeth carried by the plate member, a diaphragm secured to the said plate and adapted to lie between the plate and the mouth of the wearer, said diaphragm being spaced from the plate member where not attached thereto, a valve carried by the diaphragm communicating with the space, a liquid carried within the said space, and a suitable gas carried within the said space.

10. A denture structure comprising, a rigid plate member, a plurality of teeth carried by the plate member, a flexible diaphragm secured at its edges to the said plate and adapted to lie between the plate and the mouth of the wearer, said diaphragm being spaced from the plate member where not attached thereto, a valve carried by the diaphragm communicating with the space, a liquid carried within the said space, and a suitable gas carried within the said space.

MARTIN D. HARRIS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
494,393	Stapleton	Mar. 28, 1893
1,738,626	Willey	Dec. 10, 1929