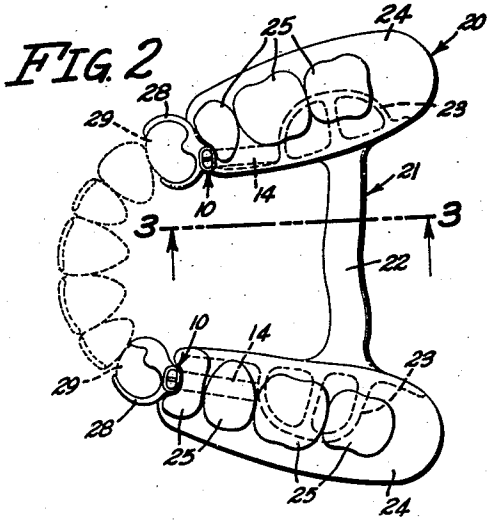
Dec. 28, 1948. L. W. BUSBY 2,457,529

DENTURE STRESS RELIEVER

Filed May 31, 1946

FIG. 2



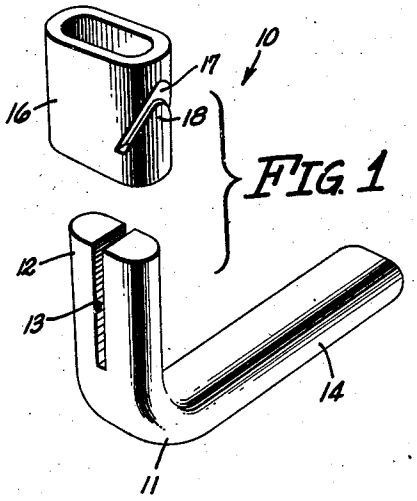


FIG. 1

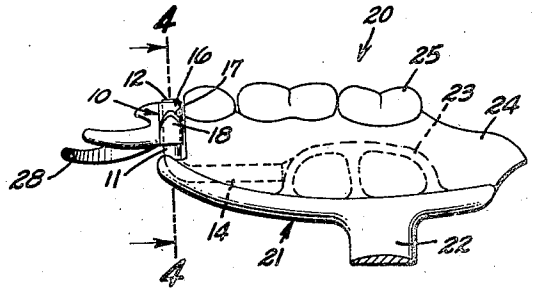


FIG. 3

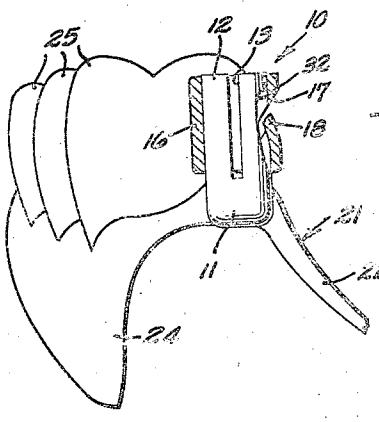


FIG. 4

INVENTOR.
LUTHER Wm BUSBY
BY
Donald L. Mapson
AGENT

Patented Dec. 28, 1948

2,457,529

UNITED STATES PATENT OFFICE

2,457,529

DENTURE STRESS RELIEVER

Luther W. Busby, Manhattan Beach, Calif.

Application May 31, 1946, Serial No. 673,674

10 Claims. (Cl. 32—5)

1

My invention relates to partial dentures and more particularly to a stress reliever for reducing stresses between a partial denture and the natural teeth.

Partial dentures, those replacing less than the natural number of teeth of the upper or lower jaw, are retained in position in the mouth by means of clasps which engage the natural or abutment teeth adjacent the denture. Such dentures usually comprise a cast metal frame formed to fit the jaw and provide a base for the artificial teeth. Saddles of plastic material or metal are carried by the frame and the artificial teeth are set in the saddle. The clasps are commonly cast integrally with the metal frame and are therefore rigid in relation to the frame. When in place in the mouth, the saddles rest on the yieldable tissue of the jaw while the clasps engage the rigid, non-yielding natural teeth as aforementioned.

During mastification, the pressure on the denture compresses the natural tissue under the denture resulting in movement of the denture in relation to the abutment teeth. This condition imposes severe stresses upon the abutment teeth causing discomfort to the patient and danger of loosening and possible loss of the abutment teeth.

Several attempts have been made in the past to provide attachments for use in connection with partial dentures for relieving the stresses between a partial denture and the natural abutment teeth to which the partial denture is attached. None of the prior attachments developed heretofore has, within my knowledge, come into general use. An analysis of these attachments has revealed disadvantages and weaknesses which the present invention is believed to have overcome.

In providing an attachment for relieving stresses between a denture and the clasps thereof, it is of primary importance that the clasps on the abutment teeth provide adequate support for the denture. If the stress relieving attachment is constructed to permit universal movement between the denture and clasps, the denture may fail to function properly because of not receiving adequate support from the clasps. This is particularly true of dentures which replace posterior teeth and have anterior clasps supporting the denture only at the front, such as the denture shown in the accompanying drawings. In developing the stress relieving attachment of this invention, no attempt has been made to relieve all of the stresses which occur between a denture and clasp; to do so would deprive the denture of adequate support by the clasp.

Another weakness to be avoided in designing a

2

stress relieving attachment is that of insufficient bearing surface between the relatively movable parts of the attachment. Such attachments must function many times each day under the severe stresses occurring during each cycle of movement of the jaw during mastication. Some of the stress relieving devices developed in the art have only line or point contact between the movable parts of the device. Such inadequate bearing surfaces wear rapidly and become too loose to properly support the denture.

Another essential requirement in the construction of a stress relieving attachment is that the attachment have as few parts as possible so as to achieve the highest possible degree of simplicity. A simple device having a minimum number of parts is much less costly and is less apt to become fouled by food particles.

With the above problems in mind, it is an object of my invention to provide a stress relieving attachment which will relieve major stresses and yet provide adequate support at all times for the denture.

Another object of this invention is the provision of such an attachment in which the movable parts thereof have ample bearing surfaces capable of resisting undue wear over long periods of continued use.

Still another object of my invention is the provision of a stress relieving attachment which can be readily adjusted to compensate for wear of the moving parts.

A further object of the present invention is to provide such an attachment which may be easily taken apart for cleaning and reassembled by the patient.

A still further object of my invention is to provide a stress-relieving attachment which will allow ample movement of the denture relative to the gums and yet will prevent accidental displacement or removal of the denture during mastication of sticky material.

Other objects and advantages will become apparent in the following description taken in view of the accompanying drawings, in which:

Fig. 1 is an enlarged, perspective view of the attachment as it appears before being mounted on a denture.

Fig. 2 is a plan view of a denture including two of the stress relieving attachments of the present invention.

Fig. 3 is an enlarged sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is an enlarged, vertical sectional view taken on line 4—4 of Fig. 3.

Referring specifically to the drawings, a preferred form of stress relieving attachment of the present invention is generally indicated throughout the several views by the numeral 10. The attachment 10, shown in Fig. 1 as it appears before being mounted on a denture, includes a male element 11 having a stud 12 bifurcated as indicated at 13. Extending radially from the stud 12 is a mounting shank 14 for attaching the element 11 to a denture as later described. The element 11 is formed of a single piece of wire preferably of non-circular cross section such as the oval shape illustrated.

Slidable on the stud 12 is a sleeve 16 having the same non-circular shape of the stud 12. The sleeve fits snugly on the stud 12 which, after being bifurcated, expands to become slightly larger than the bore of the sleeve 16. The stud 12 yields sufficiently to be inserted into the sleeve and maintain a continuous pressure outwardly against the bore of the sleeve when in use. The sleeve 16 is cut diagonally, as indicated at 17, to provide a detent 18 the purpose of which will be described hereinafter. In practice, the attachment 10 is supplied with the sleeve 16 and stud 12 of excessive length. The lengths are trimmed as required when the attachment is mounted on a given denture but are left as long as possible in order to provide maximum stability and wear.

Fig. 2 shows a denture 20 including a pair of the attachments 10 of the present invention. The denture 20 comprises a frame 21 having a palatal bar 22 and saddle frames 23. Molded on the saddle frames 23 are saddles 24 of plastic material in which artificial teeth 25 are mounted. Also included in the denture 20 are clasps 26 shaped to embrace natural abutment teeth 29 shown dotted in Fig. 2.

The male elements 11 of the attachments 10 are fixed to the denture frame 21 by soldering or otherwise attaching the shanks 14 to the denture frame 21. The sleeves 16 are attached to the clasps 28 by soldering or by inserting the sleeves 16 in the mold at the time the clasps are cast, thereby permanently uniting the clasps 28 with the sleeves 16.

After the sleeves 16 and studs 12 are mounted on the denture and cut to the proper length, a notch is filed on one side of each of the studs 12 as indicated at 32 in Fig. 4. The clasps 28 are then placed in position with the studs 12 extending into the sleeves 16 and the detents 18 of the sleeves 16 are pressed inward into the notches 32 as shown in Fig. 4. When the clasp 28 is removed from the stud 12, the detent 18 engages the upper end of the notch 32 sufficiently to yieldably resist removal of the clasp 28.

It will be seen in Fig. 3 that when the denture is in position in the mouth that removal of the denture 20 from the mouth is impossible without removal of the clasps 28 from the abutment teeth.

Should the sleeve 16 and stud 12 of the attachment 10 become worn after continued use, the stud 12 can be enlarged by inserting a small screw driver in the bifurcation 13 and springing the stud to increase its diameter until the proper fit between the stud and sleeve is restored.

The large areas of the contacting surfaces of the studs 12 and sleeves 16 transmit ample stability from the clasps 28 to the denture frame 21 while permitting sufficient vertical movement of the saddles 24 relative to the clasps 28 to compensate for the yielding of the tissues supporting the saddles during mastication.

Although I have shown and described but one preferred form of the stress relieving attachment of my invention, it is understood that various modifications and changes may be made therein without departing from the spirit of the invention or the scope of the appended claims.

I claim as my invention:

1. In an artificial denture, the combination of: a clasp for engagement with an abutment tooth, a denture adjacent said clasp, a stud extending substantially vertically in relation to said denture and fixed at its lower end to said denture, and a sleeve slidable on said stud and removable from the upper end of said stud, said sleeve being secured to said clasp, said stud and said sleeve permitting relative vertical movement between said clasp and said denture.

2. In an artificial denture, the combination of: a clasp for engagement with an abutment tooth, a denture adjacent said clasp, a stud extending substantially vertically in relation to said denture and fixed at its lower end to said denture, said stud being non-circular in cross section, and a sleeve slidable on said stud and removable from the upper end of said stud, said sleeve being secured to said clasp, said stud and said sleeve permitting relative vertical movement between said clasp and said denture.

3. In an artificial denture, the combination of; a clasp for engagement with an abutment tooth, a denture adjacent said clasp, a stud extending substantially vertically in relation to said denture and fixed at its lower end to said denture, said stud being bifurcated, and a sleeve slidable on said stud and removable from the upper end of said stud, said stud and said sleeve permitting relative vertical movement between said clasp and said denture, said bifurcated stud being expansible against the inner walls of said sleeve to take up wear and maintain a snug fit within said sleeve.

4. In an artificial denture, the combination of: a clasp for engagement with an abutment tooth, a denture adjacent said clasp, a stud extending substantially vertically in relation to said denture and fixed at its lower end to said denture, said stud being non-circular in cross section and bifurcated, and a sleeve slidable on said stud and removable from the upper end of said stud, said stud and said sleeve permitting relative vertical movement between said clasp and said denture, said bifurcated stud being expansible against the inner walls of said sleeve to take up wear and maintain a snug fit within said sleeve.

5. In an artificial denture, the combination of: a saddle having an artificial tooth mounted thereon, a clasp adapted to engage an abutment tooth and retain said saddle in position in the mouth, a stress relieving attachment connecting said clasp and said saddle, said attachment including separable male and female elements disposed to allow relative vertical movement between said clasp and said saddle, and a detent for yieldably resisting separation of said male and female elements.

6. In an artificial denture, the combination of: a saddle having an artificial tooth mounted thereon, a clasp adapted to engage an abutment tooth and retain said saddle in position in the mouth, a stress relieving attachment connecting said clasp and said saddle, said attachment including separable male and female elements disposed to allow relative vertical movement between said clasp and said saddle, and a detent for yieldably resisting separation of said male

and female elements, said male and female elements being non-circular in closs section to prevent rotation of said clasp and said saddle about the axis of said attachment.

7. In an attachment for relieving stresses between a clasp and saddle in an artificial denture, the combination of: a male element formed to provide an upstanding stud, a mounting shank extending radially from said stud, and a sleeve slidable on and removable from said upstanding stud, said stud and said sleeve being mountable between said clasp and said saddle to allow relative vertical movement between said clasp and said saddle.

8. In an attachment for relieving stresses between a clasp and saddle in an artificial denture, the combination of, a male element formed to provide an upstanding stud of non-circular cross section and a mounting shank extending radially from said stud, and a non-circular sleeve slidable on and removable from said upstanding stud, said stud and said sleeve being mountable between said clasp and said saddle to allow relative vertical movement between said clasp and said saddle and prevent relative rotation of said clasp and said saddle about the axis of said stud.

9. In an attachment for relieving stresses between a clasp and saddle in an artificial denture, the combination of: a male element formed to

provide an upstanding, bifurcated stud, and a sleeve slidable on said stud, said stud being expansible against the bore of said sleeve, said attachment being mountable between said clasp and said saddle to allow vertical rectilinear movement between said clasp and said saddle.

10. In an attachment for relieving stresses between a clasp and saddle in an artificial denture, the combination of: a male element formed to provide an upstanding, bifurcated stud, and a sleeve slidable on said stud, said stud being expansible against the bore of said sleeve, said attachment being mountable between said clasp and said saddle to allow vertical rectilinear movement between said clasp and said saddle, and a detent on said attachment for yieldably resisting removal of said sleeve from said stud.

LUTHER WM. BUSBY.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,449,079	Yirikian	Mar. 20, 1923
1,451,718	Stern	Apr. 17, 1923
1,502,970	Van Houten	July 29, 1924