Dec. 16, 1924. 1,519,505

S. E. NOYES

PARTIAL DENTURE

Filed Oct. 1, 1923

Fig. 1.

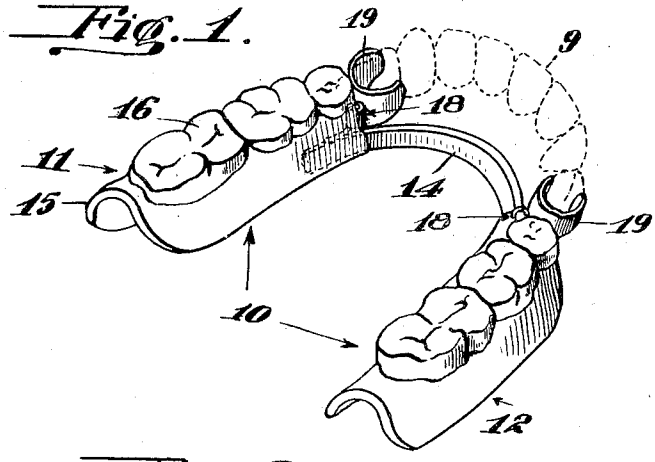


Fig. 2.

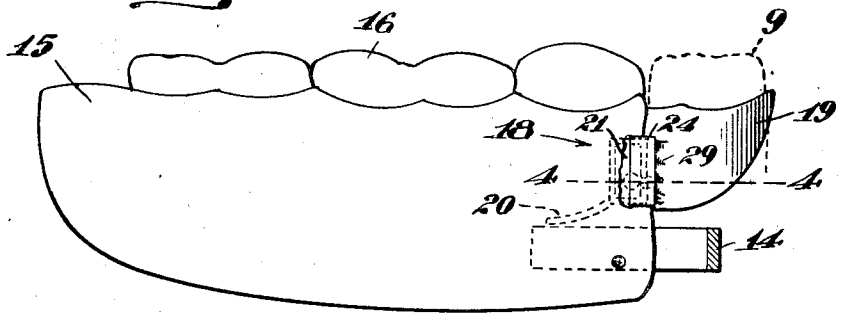


Fig. 3.

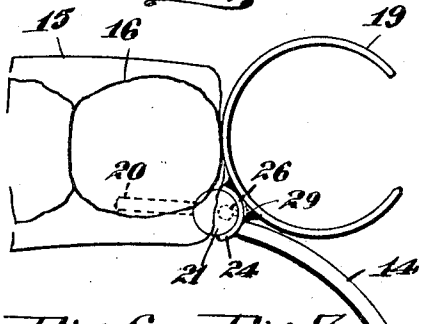


Fig. 4.

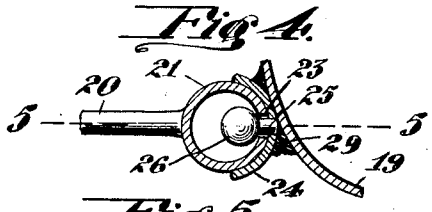


Fig. 5.

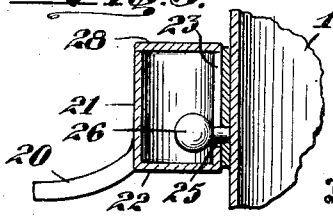


Fig. 6.

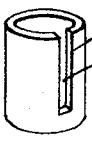
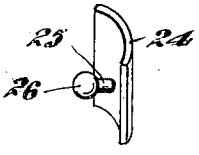


Fig. 7.



Inventor

Stanley E. Noyes;

By R. S. Berry

Attorney

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UNITED STATES PATENT OFFICE.

STANLEY E. NOYES, OF LOS ANGELES, CALIFORNIA.

PARTIAL DENTURE.

Application filed October 1, 1923. Serial No. 665,771.

To all whom it may concern:

Be it known that I, STANLEY E. NOYES, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Partial Dentures, of which the following is a specification.

My present invention relates to artificial teeth and more particularly it relates to novel means whereby a partial denture may be satisfactorily linked or secured to a natural tooth. Partial dentures, that is, dentures which replace less than the natural number of teeth in one jaw, present in some respects more difficult problems than do full dentures. For example, partial dentures require to be fastened or anchored to a natural tooth which is usually accomplished by placing a clasp at least partially around a natural tooth called an abutment tooth which is adjacent the end tooth of the denture, and connecting the clasp to the denture by means of a link secured to the latter. This connection or link, however, must be made in a manner employing movable or flexible means. Should a rigid connection or linkage be used to connect a partial denture to a natural tooth, injury would be done to the natural tooth, as shown from the following considerations: During mastication, when pressure is applied to a denture by opposing teeth, the base of the denture, which is in contact with the gum, inevitably compresses the latter, which is comparatively soft, and therefore yielding. In consequence of the compression of the gum, the denture is moved from its normal position, mostly in a vertical direction but to a certain extent it also moves laterally, and may also move anteriorly and posteriorly. Such movements of the denture signify a displacement relative to the natural teeth, which are, of course, comparatively fixed. It will therefore be appreciated that, should a rigid link or connection be used to secure the denture to a natural tooth, the movement of the denture relative to the latter would place a stress or pressure on the same. Since it is known that even slight abnormal stresses or pressures on a natural tooth, if continually repeated, loosen the tooth and displace it from its normal position, it may be seen that it is imperative that a denture must be so attached to the natural tooth so that no stress be placed thereon as would tend to disturb the tooth. This latter condition may be accomplished by the use of my invention which employs means for connecting the denture to a natural tooth in a manner to allow movement of the denture in various directions during mastication without placing an objectionable stress or pressure on the abutment tooth to which it is anchored or secured.

Denture-fastening or anchoring means of the prior art have been objectionable in more than one respect; for example, they have sometimes been of such construction that when fouled they were very difficult to cleanse. Again, their constructions have been such as to allow movement of the denture in only one direction without placing a stress on the abutment tooth. A further defect in certain denture-anchoring means has been the necessity for placing the same in alignment with the teeth, between the abutment tooth and an end tooth of the denture, in order that it may not exist as an obstruction in the mouth. The necessity for such interposed position has required that the end tooth of the denture adjacent the abutment tooth be partially cut away in order to provide space for the location of the anchoring means.

It is therefore an object of this invention to provide denture-anchoring means which need not be placed in alignment with the teeth, thereby avoiding the necessity for cutting away part of a denture tooth.

Another object of the invention is to provide anchoring means which, while not in alignment with the teeth, will yet not exist as an obstruction in the mouth.

A further object of my invention is to provide denture-anchoring means which will allow movement of the denture in more than one direction without placing a stress on the abutment tooth.

Still another object of my invention is to provide denture-anchoring means which cannot become fouled in a manner which will not yield readily to the usual tooth-cleaning methods.

Other objects of my invention will appear hereinafter.

My invention will be clearly understood by reading the following specification in connection with the accompanying drawings, showing a preferred embodiment of my invention, in which—

Figure 1 is a perspective view of a partial denture as applied to a partial set of

natural teeth, the latter being shown in dotted lines.

Figure 2 is a side elevation of the partial denture showing my denture-anchoring device partly embedded in the base of the denture, the embedded portion being shown in dotted lines. Figure 2 also shows my device secured to the abutment tooth, also shown in dotted lines.

Figure 3 is a plan view of my device, shown attached to and partly embedded in the denture.

Figure 4 is a horizontal section of my device taken on the line 4—4 of Figure 2.

Figure 5 is a vertical section of my device taken on the line 5—5 of Figure 4.

Figure 6 is a perspective view of a slotted cylinder which I employ as a part of my invention in its preferred form.

Figure 7 is a perspective view of a socket adapted to be associated with the cylinder shown in Figure 6, as hereinafter more fully described.

More particularly, Figure 1 shows anterior natural teeth 9 of the lower jaw and a partial denture 10 adapted to replace lost back teeth on both sides of a lower jaw. In this instance the denture comprises sections 11 and 12 on opposite sides of the jaw, which are connected to each other by a lingual bar 14. Sections 11 and 12, being of the same construction, it will be necessary to describe only one and to show the method whereby it may be suitably connected to the abutment tooth by means of my invention.

In section 11, 15 is a denture base of vulcanite or other suitable material of saddle formation adapted to fit over the gum on one side of the lower jaw and to carry on its back the artificial teeth 16 and having embedded in its anterior end portion one end of the lingual part 14.

Passing now to Figure 2, my device 18 is shown partially embedded in the base 15 of the denture. Affixed to my denture-anchoring device is a tooth engaging member here shown as comprising a clasp 19 which is adapted to be wrapped partially around the abutment tooth 9 for the purpose of securing the denture-anchoring device to the abutment tooth.

In Figures 4 and 5, the member 20 is a curved lug technically known in the art as a retainer, the purpose of which is to secure the denture-anchoring device to the denture, which is accomplished by embedding it in the base or saddle 15. To the inner end of the retainer 20 is connected an open top cylinder 21 having a bottom 22 and a slot 23, the latter extending from the upper end of the cylinder almost to the bottom, as shown in Figure 6. A socket 24 in the form of a curved plate, pictured in Figure 7, is provided for the cylinder 21. To the concave side of the socket 24 is secured one end of a stem 25 the diameter of which is preferably less than the width of the slot 25 in the cylinder 21, and the length of which, beyond the inner surface of the socket 24, is substantially equal to the thickness of the wall of the cylinder 21. The outer end of the stem 25 has attached to it or made integral with it a ball or sphere 26. To the convex side of the socket 24 is affixed means such as a clasp 19 adapted to embrace and effect engagement with the abutment tooth 9. In assembling the denture anchor the socket 24 is brought into engagement with the cylinder 21 by passing the stem 25 vertically downward through the slot 23 of the cylinder 21 after which the cylinder 21 is provided with a sealed top 28. The stem 25, being substantially equal to the thickness of the wall of the cylinder 21, the socket 24 is held by the sphere 26 in closely fitting relation to the cylinder 21. This structure thereby prevents the entrance of foreign matter into the cylinder 21 through the groove 23. The denture anchor is applied by attaching the socket member 24 to the clasp 19 by soldering 29 and embedding the retainer 20 into the vulcanite base 15.

The device described is so minute that it may be positioned in line with the lingual bar 14 without projecting inwardly into the mouth beyond the bar, or it may be further secluded by partial or total imbedment in the base 15 of the denture.

When pressure is applied to the upper surface of the teeth 16, the denture, as previously explained, will move vertically downward to a certain extent due to the yielding underlying gum. The downward movement of the denture carries with it the rigidly attached cylinder 21 while the socket 24, being secured to the abutment tooth, remains in a fixed position; that is, there is a vertical downward displacement of the cylinder 22 with respect to the socket 24, during which the stem 25 of the socket 24 passes relatively upward through the slot 23 of the cylinder 21. In this manner a movable joint or link is provided, which allows a vertical movement of the denture without placing a stress on the abutment tooth. Stress-free movements of the denture in various other directions are allowed by my device on account of the fact that the groove 23 is made larger than the stem 25, thus allowing play for the stem 25.

I claim—

1. In a denture-anchoring device, the combination of a slotted tube, a socket for said tube, and means on said socket engaging the slot in said tube for movably connecting said socket and tube.

2. A denture-anchoring device comprising in combination with a partial denture, a

slotted tube secured to said denture, means movably connected to said tube adapted to close the slot therein, and means for securing said means to a natural tooth.

3. A denture-anchoring device comprising, a tube having a slot, means for securing said tube to a denture, a stem passing through said slot, means at one end of said stem enclosed by said tube for retaining said stem within said slot, means for carrying said stem adapted to close said slot, and means for securing said stem-carrying means to a natural tooth.

4. A denture-anchoring device comprising a hollow cylinder, means for securing said cylinder to a partial denture, said cylinder formed with a slot, a knob enclosed by said cylinder, a stem attached to said knob passing through said slot, a socket for said cylinder secured to an end of said stem, and means for securing said socket to a natural tooth.

5. In a denture, a tube, a denture saddle carrying said tube, a tooth-engaging clasp, a guideway carried by said clasp in which said tube extends, and means for slidably connecting said tube to said guideway.

STANLEY E. NOYES.