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Konig

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[54] **ANCHOR FOR DENTAL PROSTHESES**

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[51] **Int. Cl.**.....**A61c 13/22**

[58] **Field of Search**.....32/5, 6, 7

[56] **References Cited**

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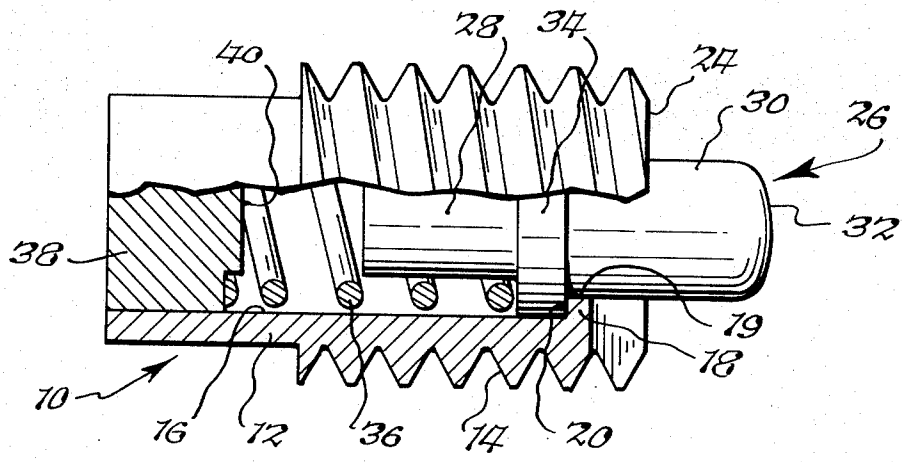
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[57] **ABSTRACT**

An anchor comprising a tubular housing adapted to be threaded into a tapped opening in a simulated tooth forming a part of a dental prosthesis. An axially movable, spring biased plunger is mounted in the housing for movement into an extended position of use in the natural undercut area of a fixed tooth in a patient's mouth and into a retracted position within the housing. The plunger is provided with an annular shoulder engagable with an abutment shoulder in the housing for limited movement into the extended position and an inner end engagable with a plug mounted in the housing for limited movement into the retracted position.

6 Claims, 3 Drawing Figures



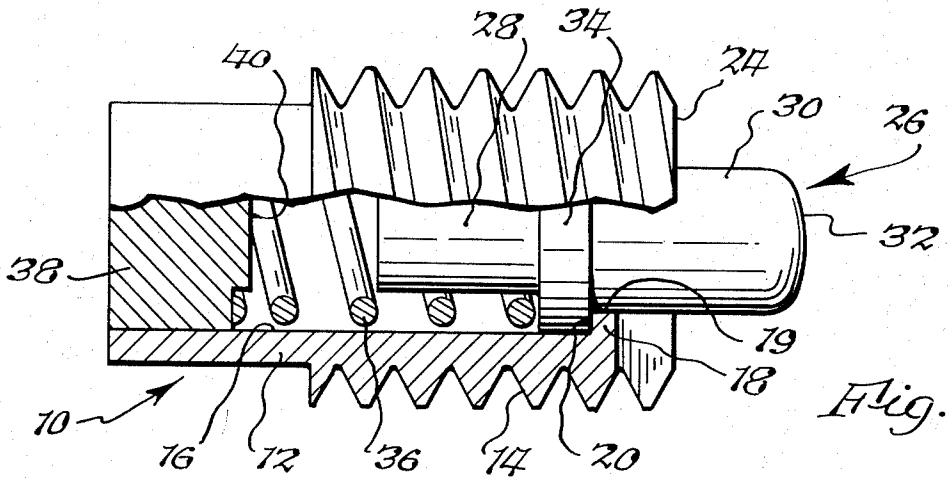


Fig. 1.

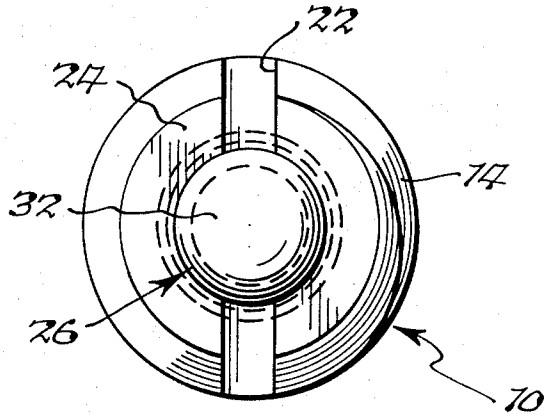


Fig. 2.

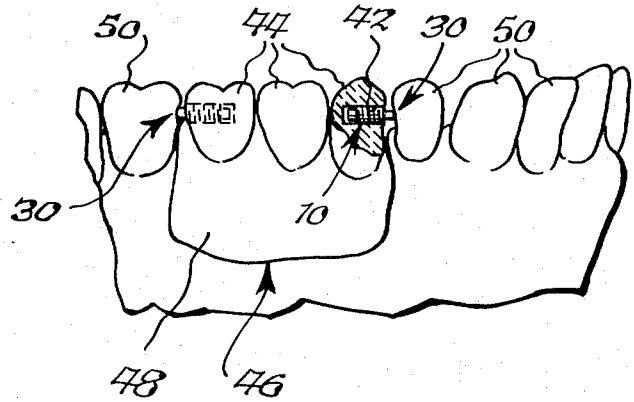


Fig. 3.

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ANCHOR FOR DENTAL PROSTHESES

BACKGROUND OF THE INVENTION

This invention relates generally to an anchor device and, more particularly, to an anchor device especially adapted for use in prosthetic dentistry.

Various types of detachable anchors or retaining devices are incorporated in dental prostheses for affixing the latter to the natural teeth in an individual's mouth. Conventionally, such anchors are in the form of wire-like clasps which engage and embrace the natural teeth to retain the prosthesis in place. Not only are such clasps unsightly and detract from the general appearance of an individual's mouth, but their frictional engagement with the natural teeth and abrading action thereagainst during removal and placement of the prosthesis results in wear of the natural teeth and possible damage thereto. Moreover, the retentive qualities of such clasp-like anchors are not completely satisfactory in that they often permit some displacement and/or torquing of the prosthesis relative to the natural teeth.

SUMMARY OF THE INVENTION

The dental prosthesis anchor of the present invention, as hereinafter described, obviates the above disadvantages by providing a removable anchor adapted to be threadably received in a tapped opening in the dental prosthesis in such a manner as to be substantially concealed and which provides adequate retention while preserving the natural teeth associated therewith.

Generally speaking, the dental prosthesis anchor of the present invention comprises a housing adapted to be threaded in an opening of a simulated tooth forming a part of the dental prosthesis. An axially movable, spring biased plunger is mounted in the housing and has a portion projecting outwardly of the housing for engagement with the undercut area of an adjacent natural tooth in the patient's mouth at each side of the prosthesis for securing the prosthesis in place. The plunger is provided with an annular shoulder and an inner abutment face for limited axial movement in opposite directions.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view, partly in cross section, of an anchor constructed in accordance with one form of this invention;

FIG. 2 is an end elevational view of the anchor of FIG. 1; and

FIG. 3 is a side elevational view, partly in cross section, showing a dental prosthesis incorporating the anchor of this invention and positioned in a patient's mouth.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now in detail to the drawings, there is shown in FIG. 1 an anchor, constructed in accordance with this invention and generally designated **10**, comprising a tubular housing **12** having an external threaded portion **14** and an internal bore **16** terminating in an end wall **18** having a central opening **19** therein. The transition between bore **16** and opening **19** defines an annular abutment shoulder **20** extending radially inwardly of the inner wall surface defining bore **16**.

A diametrical slot **22** is provided in the outer face **24** of housing **12** for receiving a suitable hand tool for inserting and removing anchor **10** into and from the dental prosthesis with which it is associated. The depth of slot **22** is less than the thickness of end wall **18** so as to space bore **16** from slot **22** and avoid the necessity of removing any burrs resulting from the milling of slot **22** during production.

A plunger **26** is mounted in the housing **12** and comprises an inner body portion **28** disposed in bore **16** and an outer body portion **30** projecting through opening **19** and outwardly from housing **12**. The outer body portion **30** is provided with a rounded tip **32** adapted to engage the natural permanent teeth or fixed bridgework of the patient's mouth. An annular central enlargement or shoulder **34** is provided on the plunger **26** between body portions **28** and **30**. The shoulder **34** of plunger **26** is normally biased against abutment shoulder **20** by a helical compression spring **36** disposed in the bore **16** between the plunger shoulder **34** and a plug **38** press fited into the bore **16** of housing **12**. The plug **38** is provided with an inner face **40** serving as a stop for limiting inward movement of plunger **26** in its retracted or depressed position.

The shoulder **34** of plunger **26** fits snugly within the bore **16** of housing **12** and the outer body portion **30** also fits snugly within the opening **19** so as to positively guide the plunger **26** is a straight axial direction thereby avoiding tilting of the plunger **26** and possible jamming thereof within the housing **12**. Also, the spring **36** is coaxially aligned with the plunger **26** to further guide the latter axially in housing **12**. Another factor precluding jamming of the plunger **26** within housing **12** is that the distance between the opposing faces of plunger **26** and plug **38** is approximately equal to the distance that the outer body portion **30** normally projects beyond the end of housing **12** so that plunger **26** can be retracted or depressed only to the position in which the tip **32** is disposed substantially flush with the outer front face **24** of housing **12**. This inward limiting movement of plunger **26** prevents the tip **32** from being depressed into the housing and becoming lodged behind shoulder **20**.

FIG. **3** illustrates a pair of anchors **10** of the present invention threaded into previously formed tapped openings **42** provided in artificial or simulated teeth **44** forming the end teeth of a dental prosthesis **46**, commonly referred to as a "partial denture." The prosthesis **46** is composed of a suitable plastic material having a base and opposite side portions **48** (only one of which is shown in FIG. **3**) custom-fitted to the patient's mouth and gum formation. Of course, any number of artificial teeth **44**, simulating natural teeth, may be included in the prosthesis **46** with anchors **10** embedded in those teeth **44** adapted to be disposed adjacent the patient's natural teeth **50**. In the illustrative embodiment depicted in FIG. **3**, it will be seen that two anchors **10** are utilized in the end teeth **44** of prosthesis **46** to hold the latter in place between spaced natural teeth **50**.

In guiding the prosthesis **46** into position toward the natural gum formation, the tip **32** of plunger **26** engages against the outer portion of the adjacent natural tooth **50** and is depressed inwardly thereby within

housing **12** allowing the prosthesis **46** to be finally positioned in place. Each plunger **26** is urged outwardly by spring **36** to dispose tip **32** in the natural undercut area along the inner portion of tooth **50** adjacent the gum line. Each anchor **10** is adjusted within opening **42** to position plunger **26** in its extreme extended position, as limited by abutment shoulder **20**, in such a manner as to preclude the exertion of any substantial pressure against the natural tooth **50**. While plunger **26** serves as a detent retaining the prosthesis **46** in place, it remains in a passive condition in its extended position so as not to apply substantial pressure against the natural teeth. The prosthesis **46** is readily removed by merely grasping the side portions **48** and pulling in a direction away from the natural gum formation.

The plunger **26** preferably is formed of nylon to prevent scratching or marring of the natural teeth when being inserted in and removed from the user's mouth. In those instances where the prosthesis is placed adjacent dental crowns or fixed bridgework, plunger **26** may be formed of metal and inserted into a specially formed cavity in the adjacent crown to securely position the prosthesis in place.

The present invention thus provides a simple anchor incorporated in a dental prosthesis for securely retaining the latter in place in a patient's mouth without any displacement or torquing of the prosthesis during normal usage. Because the anchor is substantially concealed within the body of an artificial tooth, the prosthesis creates a visual impression simulating natural teeth which is attractive in appearance as compared to the unsightly clasps employed with conventional dental prostheses. Moreover, wear and/or fatique on the natural teeth is minimized, if not eliminated, thereby extending the useful life of the latter. It has been found that the anchors **10** of the present invention may be incorporated in existing partial dentures which have proven unsuccessful thereby salvaging an otherwise useless partial denture.

A preferred embodiment of this invention has been described and illustrated in detail but it is to be understood that modifications may be made without departing from the broad spirit and scope of this invention.

I claim:

1. An anchor for a dental prostheses comprising: a housing having an external threaded portion adapted to be threaded in a dental prostheses; said housing having an internal bore terminating in an end wall having a central opening defining an internal annular shoulder between said bore and said opening, a plunger mounted within said housing for axial movement relative thereto into an extended position and a retracted position, said plunger having an inner body portion within said housing and an outer body portion disposed in said opening, a spring biasing said plunger to said extended position whereby said outer body portion projects through said opening axially outwardly from said housing, said plunger having an annular shoulder between said inner and outer body portions engagable with said housing shoulder for limiting movement of said plunger in an outward direction to said extended position, a plug mounted within said bore at the end opposite said end wall, said plug having an inner abutment face limiting movement of said plunger in a reverse direction to said retracted position, the distance between the opposing faces of said plug and the inner end of said plunger in its extended position being approximately equal to the distance that said outer body portion projects beyond the end of said housing thereby preventing retraction of the outer end of said outer portion inwardly past said housing end; said plug having an annular recess for receiving one end of said spring for properly positioning said spring within said housing; said spring serving as a guide for said inner body portion of said plunger.

2. An anchor according to claim **1** wherein said end wall has an outer face provided with a diametrical slot for receiving a tool, said slot having a depth less than the thickness of said end wall.

3. An anchor according to claim **1** wherein said plunger is formed of nylon and said outer body portion terminates in a rounded tip formation.

4. An anchor according to claim **1** in combination with a dental prosthesis having a tapped opening, said anchor housing external threaded portion being releasably secured in said tapped opening.

5. The combination according to claim **4** wherein said end wall has an outer face provided with a diametrical slot having a depth less than the thickness of said end wall.

6. The combination according to claim **4** wherein said plunger is formed of nylon and said outer body portion terminates in a rounded tip formation engagable with a fixed tooth in a patient's mouth.

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