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ARTHUR FEINBERG, OF NEW YORK, N. Y.

DENTAL ANCHOR FOR REMOVABLE BRIDGEWORK.

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To all whom it may concern:

Be it known that I, ARTHUR FEINBERG, a citizen of the United States, residing at New York city, county and State of New York, have invented a certain new and useful Dental Anchor for Removable Bridge-work, of which the following is a specification.

This invention is a dental anchor adapted to be associated with bridgework for the purpose of securing such bridgework to abutment teeth in such manner that the bridge may be removed when desired to sterilize and clean it.

The object of the invention is to provide a construction of this character which will firmly and efficiently maintain the bridge-work normally in position in such manner as to eliminate undue strain on abutment teeth and preclude inadvertent displacement of the bridgework.

The invention broadly stated comprises male and female elements, one of which is adapted to be secured to the bridgework or other artificial denture and the other of which is adapted to be secured to an abutment tooth. Ordinarily the female member or part is associated with the abutment tooth and the male member with the artificial denture although this arrangement may be reversed.

It has heretofore been suggested to provide a resilient connection between the male and female parts of bridgework anchors, but in every instance so far as I am aware, the male member has been made resilient so as to have a frictional expansible grip with the female member. As the anchors must, in practice, be made very small, and the male member the smaller of the two, it is very difficult to obtain the proper grip through the use of these prior constructions and if such grip is obtained, the desired give or flexibility of the structure is lost. According to the present invention, in contradistinction, the female member is constructed to embody resilient or springy characteristics and the male member may be made either rigid or springy in order to insure proper cooperation between the parts. Aside from this broad feature of the invention, the present structure embodies novel structural features which impart to it increased efficiency and better performance than has heretofore been possible to obtain in prior constructions.

In the preferred manner of carrying out the present invention, the female member is made resilient throughout its entire height and its springy structure allows it to well adapt itself to conformity and cooperation with the male member to the end that the male member is held firmly in position but is nevertheless permitted to partake of the slight movements requisite to proper operation and comfort.

Features of the invention, other than those specified, will be apparent from the hereinafter detailed description and claims, when read in conjunction with the accompanying drawings.

The accompanying drawings illustrate different practical embodiments of the invention, but the constructions therein shown are to be understood as illustrative only and not as defining the limits of the invention.

Figure 1 is a perspective view showing the male and female members constructed in accordance with the present invention.

Figure 2 is a central vertical section of the female member shown in Figure 1.

Figure 3 is a development of the female member, that is to say, the blank from which this member is formed is shown in this figure.

Figure 4 is a perspective view showing the female member of a modified construction.

Figures 5 and 6 are views similar to that of Figure 1 but illustrating further modified forms of construction.

Figure 7 shows the construction of Figure 6 associated with dental work; and,

Figure 8 shows a female member of the character shown in Figure 1 associated with an abutment tooth and a modified form of male member associated with an artificial denture.

Referring to the drawings and more particularly to the construction shown in Figures 1 to 3 inclusive, 1 designates a female member and 2 a male member. The female member 1 is constructed from the blank 1' shown in Figure 3. The body 3' of this blank is formed into the elongated tubular form to constitute the body 3 of the female member shown in Figure 1 in such manner that the tabs 4 of the blank will come into end abutting relation as shown in Figure 1 leaving above them an elongated slot 5. The blank is provided with a tongue 6' and during the forming operation this tongue is bent down into the interior of the tubular

construction and constitutes the tongue 6 of Figure 1.

The blank is of resilient or springy material so that in the finished article, not only the sleeve or tubular body is circumferentially resilient, but the tongue 6 is also inherently resilient. During the forming operation, the tongue is bent so that in the finished construction it will project downwardly and toward the forward face of the tubular section preferably to a point beneath the lower edge of the slot 5.

Inasmuch as the tubular sleeve is hollow its interior constitutes a pocket which is adapted to receive the head of the male member.

The male member shown for cooperation with the female member is of T-shape section. The width across the head 7 of the T is substantially equal to the interior length of the female member, the thickness of the head is slightly less than the width of the opening in the female member and the height of the head is substantially equal to the height of the female member. The leg 8 of the T member is of a thickness slightly less than the width of the slot 5 and extends downwardly from the upper edge of the T member as shown in Figure 1 over a distance substantially equal to the depth of the slot 5.

With this arrangement of the parts, it will be apparent that these parts may be brought into cooperation by forcing the head 7 downwardly into the female member until the lower edge 9 of the leg of the T engages with the lower edge of the slot 5. During this operation, the tongue 6 will be engaged and forced rearwardly thereby functioning as a gripping jaw to force the head of the T member against the forward face of the female member and maintain the parts against inadvertent displacement from one another. During this operation moreover the whole female member will be placed under more or less tension so as to tightly grip the head of the male member and firmly hold the parts together.

The manner of practically employing these parts is graphically shown in Figure 8, wherein the female member of the character shown in Figures 1 to 3 is here illustrated as associated with an abutment tooth 10. This tooth is a natural tooth and the female member 1 is shown as firmly secured thereto by embedding the female member in an inlay designated 11. In practice, however, the female member may be associated with a cap or other expedient which will firmly secure this member to the natural abutment tooth.

In order that the head of the male member entirely fill the female member so as to leave no opening or space for the accumulation of food or other matter which

would lodge therein and putrify, the head 7 is preferably provided with a cut away portion or channel 70 extending vertically the entire length of the head and of a width substantially equal to the width of the spring tongue 6. When the parts are assembled, the tongue will occupy and substantially fill this channel while the remainder of the head will fill the sleeve, so that no open spaces will be present.

In Figure 8 a modified form of male member is illustrated. In this figure, the male member instead of being made in the form of a solid T is bent up from a sheet metal blank preferably of resilient material so as to embed a T head 7^a and a shank 8^a with which is associated laterally extending flanges 12 permanently secured in any suitable manner to the artificial denture 13. While for purpose of illustration Figure 8 shows a modified form of male member, it will be apparent that the male member shown in Figure 1 may be associated with the artificial denture 13 by soldering or otherwise securing the leg of the T member 2 to the artificial denture.

In Figure 4 a modified form of construction is illustrated. In this showing the female member is in the form of a sleeve similar in many respects to the sleeve which constitutes the female member of Figure 1, but in the sleeve of Figure 4, the tabs 4 are omitted and the slot 14 which corresponds to the slot 5 extends the full height of the sleeve and the bottom of the sleeve is closed, as shown at 15. The bottom of the sleeve of the construction of Figure 1 may also, if desired, be closed as shown at 15 in this figure, by a part 15' formed on the blank of Figure 3.

In Figure 5 the structure is substantially the same as shown in Figure 4, except that the bottom of the sleeve is left open and the sleeve is vertically tapered towards its base whereas in Figure 4, it is shown as having parallel sides. A T piece similar to that shown in Figure 1, but having a leg extending the full height of the T piece is adapted for cooperation with the construction shown in Figure 4, while a T piece having a tapered head as shown in Figure 5 is adapted for cooperation with the female member shown in this figure.

In the constructions of Figures 1 to 5, the female member is shown in the form of a sleeve of oval or elongated tubular section. In Figure 6, the female member is shown as constructed from a sleeve of substantially circular cross section. This female member is designated 1^b. A slot 5^b extends the full height of the sleeve and a tongue 6^b is formed integral with the upper edge of the sleeve and extends downwardly into the sleeve in a manner corresponding to the tongue 6 of Figure 1. When a sleeve

of circular section is employed, the head of the male member should be correspondingly shaped. Thus the head 7^b is substantially circular in section, is provided with a channel 70^a corresponding in function to the channel 70, and is formed with a shank 8^b of a thickness adapting it to be passed into the slot 5^b. The shank may be made straight to correspond with the leg of the T shown in Figure 5, but is shown as having associated therewith an integral attaching plate 12^b adapted to be secured to an artificial denture in any suitable manner.

Figure 7 shows the construction of Figure 6 associated with dental work. In this showing, the male member is permanently secured to the artificial denture 13 while the female member 1^b is permanently secured to the natural abutment tooth 10 by embedding it in an inlay. The parts cooperate in the same manner as described with reference to Figure 1, it being manifest that the tongue 6^b will be flexed and placed under tension when the head of the male member is forced into place.

It may be here noted that in such constructions as shown in Figure 1 where the slot 5 extends only part way of the height of the female member, the artificial denture will be supported firmly from beneath by the upper edges of the abutting tabs 4 whereas in such constructions as are shown in Figures 5 and 6, and wherein the slots extend the full height of the female member, the structure will function after the manner of a stress breaking attachment inasmuch as the underlying gum will back up and support the bridgework during chewing or the application of other pressures in the direction of the gum.

In such a construction, as shown in Figure 4, the lower end of the head of the male member will bear against the closed bottom 15 of the female member which will act as a footing and serve the same purpose as results from engagement between the lower edge 9 of the leg of the T piece in Figure 1 and the upper edges of the tabs 4.

It will be noted however from the foregoing description of the invention that in each instance the female member is resilient throughout its entire height and in embedding this member in an inlay or associating it with a crown or otherwise, care is preferably taken so as to permit slight expansion and contraction of the tubular female member circumferentially since I find that when this expansion and contraction is allowed, very satisfactory and desirable results are obtained. The reason for this is that the male member will be more firmly gripped and held in a springy manner thereby allowing the artificial denture to assume a thoroughly comfortable position and at the same time allow of very slight movement thereof

to eliminate strains on the abutment teeth while absolutely eliminating all possibility of inadvertent displacement of the artificial denture.

The accompanying drawings show the invention in its preferred practical forms but the invention is to be understood as fully commensurate with the appended claims.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent is:

1. A dental anchor embodying male and female members, the latter of which is in the form of a tubular casing having a resilient clamping jaw integral with one extreme end of the casing and extending into the interior of the casing and longitudinally thereof toward the opposite end of the casing said male member being adapted to enter the casing and be engaged by the clamping jaw.

2. A dental anchor embodying a female member in the form of a tubular sleeve provided at one side with a slot and having a resilient clamping jaw integral with the sleeve and extending into the interior thereof, in combination with a male member having a head adapted to be forced into the sleeve and be gripped by the clamping jaw, said head having an extension adapted to project through the slot of the female member to permit the attachment of the extension to a natural tooth or artificial denture.

3. A dental anchor embodying a female member in the form of a resilient tubular sleeve provided at one side thereof with a slot extending from one end of the sleeve toward the other end thereof for a part of the height of the sleeve and having a resilient clamping jaw integral with one extreme end of the sleeve and extending into the interior and longitudinally of the sleeve toward the other end thereof, in combination with a male member having a head adapted to be forced into the sleeve and be gripped by the clamping jaw, said head being provided with an extension adapted to project through the slot of the female member to permit the attachment of the extension to a natural tooth or artificial denture, and to engage with the inner end of said slot.

4. A dental anchor embodying a female member in the form of a longitudinally tapered tubular sleeve provided at one side thereof with a slot and having a resilient clamping jaw extending longitudinally and interiorly of said sleeve, in combination with a male member having a head longitudinally tapered throughout its length and adapted to be forced into gripping relation with the taper female member and provided with an extension adapted to project

through the slot to permit the attachment of the extension to a natural tooth or artificial denture.

5 5. A dental anchor embodying a tubular sleeve of elongated section provided along one of its longer sides with a slot, and a resilient jaw mounted at one side of one extreme end of the sleeve and projecting into said sleeve and toward the opposite
10 side and end thereof, in combination with a male member having a head adapted to be forced into and longitudinally of the sleeve against the tension of said jaw which is engaged by the head as soon as the head starts
15 to enter the sleeve, said head having an extension adapted to project through the slot of the female member to permit the attachment of the extension to a natural tooth or artificial denture.

20 6. A dental anchor embodying a tubular sleeve of elongated section provided along one of its longer sides with a slot and having a resilient tongue integral with the opposite side of the tubular sleeve and extending
25 longitudinally into the interior thereof, in combination with a male member having a head adapted to be forced into the sleeve and be gripped by the clamping jaw, said head having an extension adapted to project
30 through the slot of the female member to permit the attachment of the extension to a natural tooth or artificial denture.

35 7. A dental anchor embodying a female member in the form of a substantially circular tubular sleeve provided at one side with a slot and diametrically opposite from the slot with a resilient tongue projecting longitudinally into the interior of said sleeve from one end thereof toward the opposite
40 end in combination with a male member having a substantially circular head adapted to be forced into the interior of the tubular sleeve and into gripping relation therewith, said head having an extension adapted to
45 project through the slot in the sleeve to permit the attachment of the extension to a natural tooth or artificial denture.

8. A dental anchor embodying a tubular female member provided at one side with a

slot and having a resilient tongue extending 50 into the interior of the female member from one end thereof, in combination with a male member provided with a head adapted to be forced into the female member and having an extension adapted to project 55 through the slot to permit the attachment of the male member to a natural tooth or artificial denture, said head being formed with a cut away portion to receive the resilient tongue, whereby open spaces for 60 the accumulation of extraneous matter are avoided.

9. A dental anchor embodying a female member comprising a casing provided interiorly with a pocket therein and having a 65 resilient clamping jaw positioned interiorly of and extending longitudinally of the pocket, in combination with a male member provided with a head shaped to fit around the jaw and fill the pocket when the head 70 is introduced into the pocket.

10. A dental anchor embodying a female member in the form of a tubular casing provided at one side with a slot and having a 75 resilient clamping jaw extending longitudinally of the casing and into the interior thereof, in combination with a male member having a head adapted to be introduced into the casing and into gripping relation with the jaw, said head having a cross section 80 substantially corresponding to the cross section of the casing and having a channel formed in the head to receive the jaw and having a cross section substantially corresponding to the cross section of the jaw. 85

11. A female member for a dental anchor embodying a tubular sleeve provided with a slot extending longitudinally thereof from one end of the sleeve to the other in a vertical direction, and a resilient tongue formed 90 integral with one end of the sleeve and extending longitudinally of the sleeve into the interior thereof and toward the other end of the sleeve.

In testimony whereof I have signed the 95 foregoing specification.

ARTHUR FEINBERG.