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B. WEISSMAN

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ARTIFICIAL DENTURE

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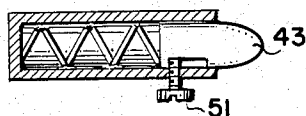


FIG. 1.

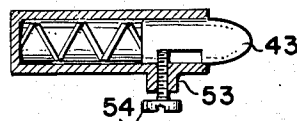


FIG. 2.

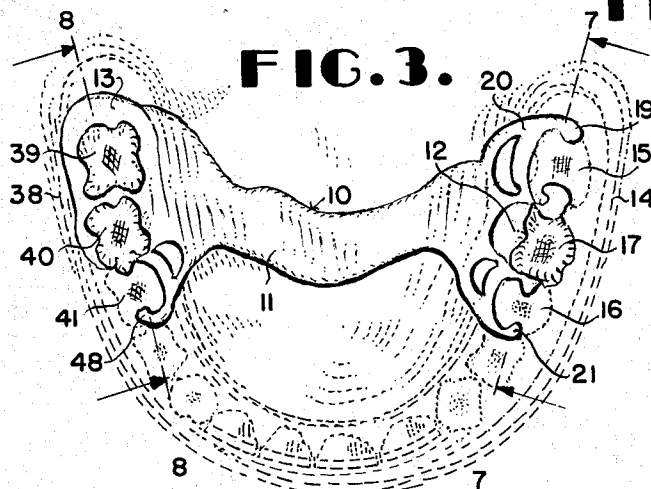


FIG. 3.

FIG. 4.

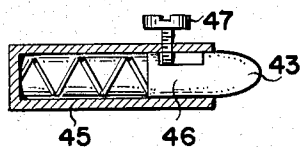


FIG. 5.

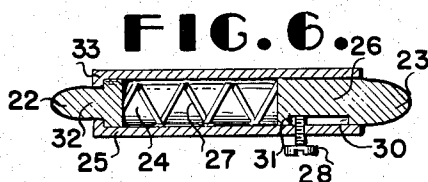
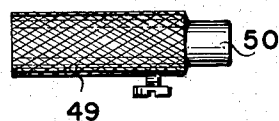


FIG. 6.

FIG. 7.

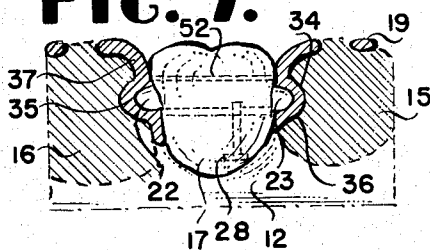
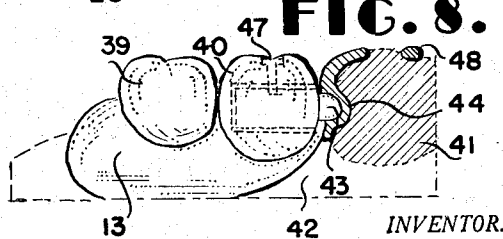


FIG. 8.



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ARTIFICIAL DENTURE

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5 Claims. (Cl. 32—5)

This invention relates to improvements in removable artificial dentures.

The replacement of missing natural teeth is generally accomplished by a dental prosthesis comprising artificial teeth integrally mounted on a foundation structure which simulates the human gums. The foundation structure fits over the gums and the natural existing teeth are used as anchors for the prosthesis. It is obvious that in order to provide efficient service, the means for anchoring the prosthesis to the natural teeth must prevent displacement when positioned operatively in one's mouth. Since periodic cleaning and maintenance must be accomplished it is highly preferable that the anchoring means permit the user to remove the prosthesis when desired.

Consequently it is the primary object of this invention to provide a dental prosthesis adapted for convenient removable installation to replace missing natural teeth wherein the prosthesis includes means for firmly grasping the adjacent existing natural teeth preventing thereby displacement without marring the appearance of the user's teeth.

Another object of this invention is the provision of a dental prosthesis which can be resiliently and removably anchored to the existing natural teeth formation providing sturdy artificial teeth where desired without defacing the appearance of the user's teeth with visible clamps, braces or the like.

A further inventive object is the provision of a removable dental prosthesis which can be aesthetically mounted firmly in the user's mouth including resilient detents projecting from artificial teeth adapted to engage adjacent natural teeth preventing relative movement between the natural teeth and the artificial teeth.

A still further inventive object is the provision of a dental prosthesis comprising artificial teeth having resilient projections adapted to engage adjacent natural teeth preventing relative movement during normal usage wherein the resilient projections permit the removal of the prosthesis from the user's mouth for cleaning and maintenance purposes.

Further objects and novel features of the invention will become more apparent from the following detailed description when read in conjunction with the annexed drawings in which:

Figure 1 is a longitudinal section of a species of resilient detent used in connection with the dental prosthesis involved herein for anchoring the prosthesis to existing natural teeth.

Figure 2 is a similar section of another species of detent;

Figures 3 is a plan view of an assembly of the dental prosthesis operatively installed in the user's mouth;

Figure 4 is a longitudinal section of a further species of detent;

Figure 5 is an elevation of a still further species of detent;

Figure 6 is a longitudinal section of a still further species of detent which includes resilient projections from

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both sides of the false dentures as distinguished from the single projections of Figures 1, 2, 4 and 5;

Figure 7 is a section through plane 7—7 of Figure 3 showing an artificial tooth anchored to surrounding natural teeth (dotted lines) by means of the detent species of Figure 6; and

Figure 8 is a section through plane 8—8 of Figure 3 showing a group of artificial teeth resiliently anchored to an adjacent natural tooth by a species of detent shown in Figure 4.

In Figure 3 an assembled dental prosthesis 10 incorporating the invention is shown operatively positioned within a user's mouth. The prosthesis comprises a palatal bar 11 extending integrally between spaced saddles 12 and 13 located at opposite ends of the palatal bar. The palatal bar is formed of a suitable plastic or other material conventionally used in dental work. The saddles 12 and 13 are convexly shaped from a dentally suitable material to fit snugly about the gums and are colored to match the hue of the user's gums thus providing a more natural appearance to the installation. The palatal bar 11 is shaped to conform to the contours of the user's palate. The material employed in the fabrication of the palatal bar should be sufficiently resilient to adjust to palatal irregularities and sufficiently rigid to withstand inward deflection of the saddles during normal usage. The saddle structure is more clearly seen in Figure 8.

In Figure 3, the prosthesis shown is adapted to provide artificial teeth for two different situations existing on opposite sides of the mouth. Although the specific prosthesis depicted relates to the specific teeth arrangement shown, it is obvious that the method disclosed herein for replacing missing teeth is general and can be applied to any teeth arrangement.

Referring to Figure 3, on the side 14, a missing natural molar between existing molars 15 and 16 is replaced by an artificial tooth 17 which projects integrally from the saddle 12. The tooth 17 is fabricated from the usual materials used in making false dentures and is rigidly mounted in a recess 18 along the outer saddle surface by conventional means. Spaced from the tooth 17 and also projecting integrally from the palatal bar 11, there is provided a reciprocal arm 19 which includes a clasp 20 for grasping the side of the tooth 15 remote from the false tooth 17. A second reciprocal arm 21 similar to the arm 19 and symmetrical relative to the tooth 17 projects from the palatal bar 11 to grasp the far side of the tooth 16. Thus the reciprocal arms partially anchor the palatal bar 11 and the false tooth 17 to the natural teeth on either side of the missing tooth.

The prosthesis is more firmly secured to the existing tooth formation by the provision of spring pressed detents 22 and 23 which are carried on opposite sides by the tooth 17. These detents are biased outwardly from the tooth 17 and fit into coacting recesses provided in the adjacent walls of the natural teeth 15 and 16. Referring to Figures 6 and 7 the detents 22 and 23 comprise reciprocable plungers mounted slidably in the bore 24 of a hollow casing 25. The plunger 26 carrying the detent 23 is normally biased by a spring 27 to the position of Figure 6, wherein the detent 23 projects beyond the end of the casing. The plunger 26 is prevented from completely leaving the casing by a screw 28 threaded through the casing wall and extending into a slot 29 formed along the surface of the plunger 26 providing the spaced abutments 30 and 31. At the opposite side of the casing 25, the detent 22 forms the externally projecting portion of the plunger 32 which is slidably mounted in the bore 24 bearing against the side of spring 27 remote from plunger 26. A transverse collar 33 prevents the plunger 32 from being forced out of the casing 25. Detents 22 and 23 have tapered heads which are adapted to

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fit in complementary lateral recesses 34 and 35 provided by the caps 36 and 37 mounted securely on the adjacent natural teeth 15 and 16. Thus it is apparent that when the tooth 17 is inserted between the natural teeth 15 and 16, the spring pressed detents 22 and 23 will snap into the recesses 34 and 35 locking the false tooth firmly in place.

On the other side of the mouth 38 adjacent the saddle 13, two artificial teeth 39 and 40 forming part of the prosthesis are shown operatively positioned relative to an existing tooth 41. Referring to both Figures 3 and 8, the false teeth 39 and 40 are seen to project integrally from the saddle 13 which fits snugly over the gum formation 42. In this situation the tooth 40 which adjoins the natural tooth 41 is provided with a single detent 43 which projects laterally from the tooth 40 into a recess 44 formed in a crown or cap mounted on the natural tooth 41. The detent assembly used in this connection is shown in Figure 4 to comprise a hollow casing 45 containing an outwardly spring pressed plunger 46. Again a screw 47 restricts the axial movement of the plunger 46 to predetermined positions. Normally the detent 43 projects from the casing and is retained in the tooth recess 44 locking the tooth 40 to the natural tooth 41. Further anchoring means are provided in the form of a reciprocal arm 48 which projects from the palatal bar to grasp the natural tooth 41 on the side remote from the false tooth 40.

Thus it is seen that whether the artificial tooth is installed between the two natural teeth, or two artificial teeth are secured to an adjoining natural tooth, the adjoining teeth in both cases are always grasped on both sides providing a C clamp arrangement. Since the jaw of the C clamp corresponding to the detent is movable, it is obvious that the prosthesis is easily removable. Pressure exerted by the user to raise the prosthesis away from the natural gum will cause the detents of Figure 7 to press against the inclined surfaces of the recesses 34 and 35 thereby resulting in the retraction of the detents within the casing against the spring action, permitting the removal of the prosthesis. The pressures encountered by the false teeth when in use are insufficient to cause the retractions of the detents. Thus although the prosthesis is removable, it will not be displaced when used in one's mouth.

Obviously the detent 43 of Figure 8 functions analogously to the above described detent of Figure 7.

In Figure 5 the detent assembly 49 is similar to that shown in Figure 4 except that the square end detent 50 is substituted for the tapered detent 43. A detent such as 50 is used in connection with teeth which do not have a recess prepared to receive the detent. Such teeth have natural undercut portions which provide retaining abutments for square end detents such as 50.

In Figure 1, the detent assembly differs from the assembly of Figure 4 in that the screw 51 is inserted from the underside of the saddle. Thus as shown in Figure 7, the screw 51 would pass through the saddle 12, and the lower portion of the tooth 17 to project into casing. The tooth 17 is provided with a transverse bore 52 in which is snugly mounted the casing 25. The actuating head of the screw 51 when threaded into the casing 25 bears against the inner surface of the saddle 12 thus anchoring the casing 25 securely to the tooth 17. In a similar fashion the casing 45 of Figure 4 is anchored to the tooth 40 of Figure 8 by means of the upwardly extending screw 47. In the latter case the head of the screw bears against the upper surface of the tooth 40 providing an additional wearing surface for the tooth, preventing wear and tear.

It is preferred however to mount the casing integrally in the tooth during the fabrication process of the tooth as when the false tooth is being cast. This procedure is found preferable particularly when plastic teeth are employed since casting the false tooth material around the casing anchors it firmly and securely in position therein

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and minimizes the possibility of the formation of cracks or crevices within which food or similar particles may collect. As shown in Figure 5 the outer surface of the casing may advantageously be provided with knurls to form a firm anchor with the tooth which is cast over it. After the mounting of the casing within the tooth in the manner indicated a suitable hole is drilled in either the undersurface of the gum or through the top of the tooth for the purpose of receiving the screw. In providing a removable screw of this character it is conveniently possible to remove the spring and plunger elements by retracting the screw. Thus, the spring and plunger may be readily replaced or removed for cleaning in the event that they become clogged. Thus the arrangement permits the device to be readily maintained in operating and sanitary condition.

It should be understood that the screw arrangements of Figures 1 and 4 can be interchangeably used with any of the teeth arrangements shown in Figures 7 and 8.

In Figure 2 the detent assembly is further modified by a collar 53 which provides additional threads for the screw 54.

It is now apparent that the disclosed dental prosthesis can be rapidly installed or removed without the aid of special appliances. Since the detents are carried internally, it is difficult for an observer to detect the presence of the artificial dentures. Moreover the novel detent structure permits the user to remove the prosthesis, detach the component parts of the detent to either thoroughly clean the device or repair worn out portions thereof. The structure is quite simple and can be fabricated economically.

It should be also understood that the embodiments shown are merely preferred ones and that many changes involving size, shape, arrangement, material, etc. can be instituted within the contemplated inventive scope.

Having described in detail the nature of the invention, a grant of Letters Patent is hereby solicited for the invention as defined in the following claims:

1. A removable dental prosthesis adapted to replace missing natural teeth comprising a saddle imitating the gum formation and shaped to fit snugly over the user's gums including a false tooth projecting integrally from the saddle, said tooth including a resilient detent projecting outwardly from the tooth and adapted to engage co-acting portions of an adjacent natural tooth to anchor the false tooth to the natural tooth, in further combination with an arm connected to the saddle and adapted to grasp the said adjacent natural tooth on a side remote from the false tooth.

2. A removable dental prosthesis as in claim 1 wherein a second arm projects from the saddle and grasps another natural tooth on the side of the false tooth remote from the first said natural tooth.

3. A dental prosthesis adapted for removable installation in a user's mouth comprising a palatal bar integrally connected at both ends to saddles formed to snugly fit on and simulate appearance of natural gums, said palatal bar being sufficiently resilient to conform to irregularities in the contour of the user's palate and sufficiently rigid to provide mutual lateral support for the said saddles, each saddle including at least one false tooth projecting integrally from the saddles in the manner resembling natural tooth formation, in combination with detents projecting laterally from a tooth on each saddle, said detents being spring biased resiliently away from the false teeth and adapted to coact with complementary recesses in adjacent natural teeth when the prosthesis is operatively positioned within the user's mouth thereby preventing displacement of the prosthesis when in use, in further combination with reciprocal arms extending from the palatal bar and spaced from the detents of each false tooth, said arms being adapted to removably grasp the adjacent natural teeth on the sides remote from the detents.

4. A dental prosthesis as in claim 3 wherein one of said

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saddles includes a tooth with detents projecting from opposite sides of the tooth.

5. A dental prosthesis as in claim 3 wherein one of said saddles includes two false teeth.

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