

[54] **WIDE BLADE DENTAL IMPLANT**

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 114,766, Feb. 12, 1971, Pat. No. 3,683,501.

[52] U.S. Cl. **32/10 A**

[51] Int. Cl. **A61c 13/00**

[58] Field of Search. **32/10 A, 2, 8**

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Primary Examiner—Robert Peshock

[57] **ABSTRACT**

An improved dental implant comprising an implant portion for implanting in a jaw bone, a head portion for supporting a dental attachment, and a neck integrally connecting said head portion with said implant portion, said implant portion being in the form of a comparatively thin blade having a shoulder edge from which said neck projects and an opposite free edge, said shoulder edge being interrupted on at least one side of said neck by an aperture through said blade, and shoulder means interposed between said neck and said aperture for retarding the growth of gum tissue along said neck into said aperture.

4 Claims, 17 Drawing Figures

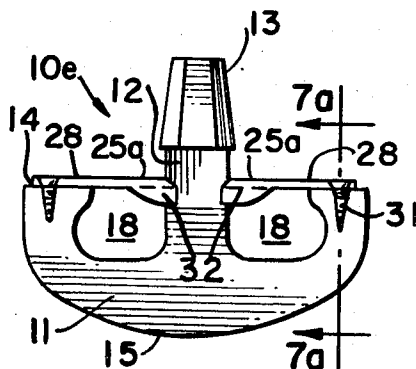


FIG. 1.

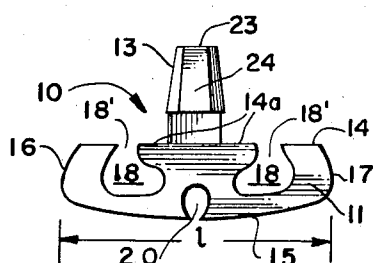


FIG. 1a.

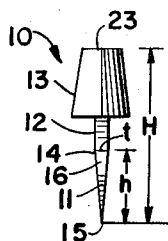


FIG. 2.

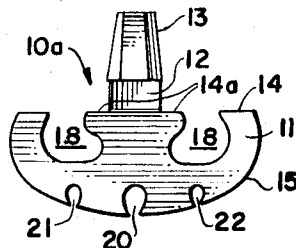


FIG. 2a.

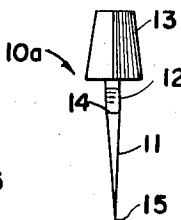


FIG. 3.

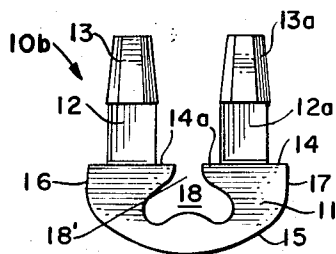


FIG. 3a.

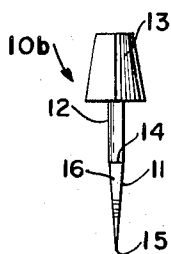


FIG. 4.

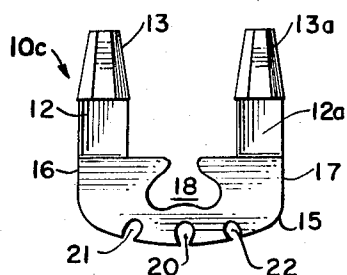


FIG. 4a.

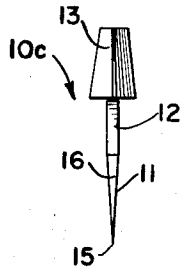


FIG. 5.

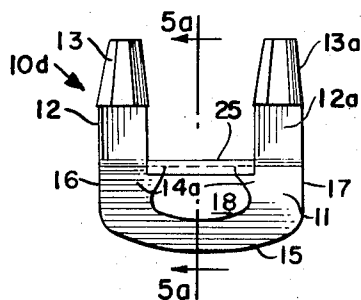


FIG. 5a.

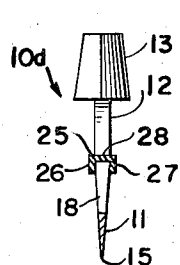


FIG. 6.

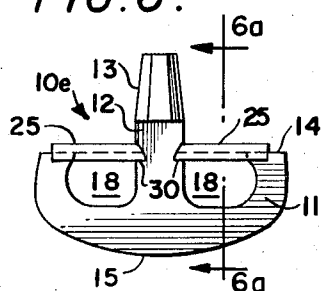


FIG. 6a.

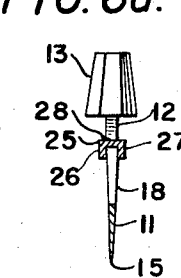


FIG. 7.

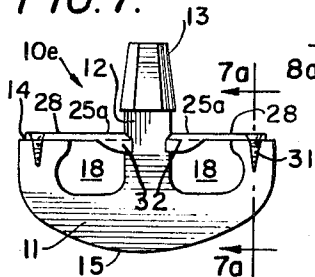


FIG. 8.

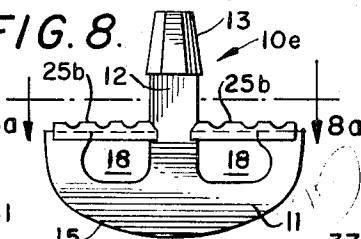


FIG. 8a.

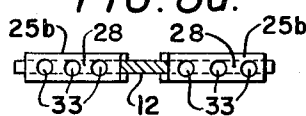


FIG. 7a.

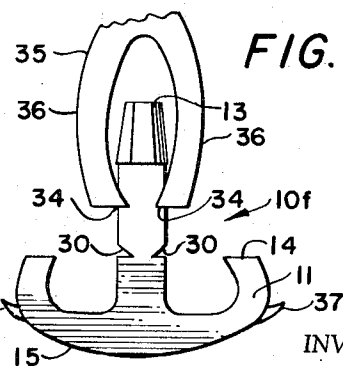
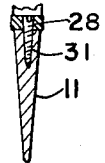


FIG. 9.

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WIDE BLADE DENTAL IMPLANT

The present application is a continuation-in-part of my earlier filed pending application Ser. No. 114,766, filed Feb. 12, 1971 now Pat. No. 3,683,501 dated Aug. 15, 1972.

This invention relates to an improved dental implant of the type having an implant portion for implanting in the jaw bone of a patient, a head portion for supporting one of various types of dental appliances such as an artificial tooth, and a neck integrally connecting the implant portion with the head portion. The implant portion of this invention is a comparatively thin blade having a shoulder edge from which the neck projects and a free edge opposite the shoulder edge. At least one bone receiving aperture is provided through the blade portion which interrupts the shoulder edge on one side of the neck and shoulder means are provided which extend laterally from said neck for retarding the growth of gum tissue along the neck into the bone receiving aperture.

It is a further object of the invention to provide removable shoulder caps to bridge the interrupted shoulder edge of certain embodiments of this invention.

It is a further object of this invention to provide notches in the neck portion of certain implant embodiments of this invention for the purpose of receiving the spaced legs of a force applying tool.

These and other objects, advantages and novel features will be apparent from the following description and the accompanying drawings wherein:

FIG. 1 is a front elevational view of one embodiment of the invention;

FIG. 1a is a left hand side elevational view of the invention shown in FIG. 1;

FIG. 2 is a front elevational view of another embodiment of the invention;

FIG. 2a is a left hand side elevational view of the invention shown in FIG. 2;

FIG. 3 is a front elevational view of another embodiment of the invention;

FIG. 3a is a left hand side elevational view of the invention shown in FIG. 3;

FIG. 4 is a front elevational view of another embodiment of the invention;

FIG. 4a is a left hand side elevational view of the invention shown in FIG. 4;

FIG. 5 is a front elevational view of another embodiment of the invention;

FIG. 5a is a cross-sectional view taken along line 5a—5a of FIG. 5;

FIG. 6 is a front elevational view of another embodiment of the invention;

FIG. 6a is a cross-sectional view taken along line 6a—6a of FIG. 6;

FIG. 7 is a front elevational view of another form of the invention;

FIG. 7a is a fragmentary cross-sectional view taken along line 7a—7a of FIG. 7;

FIG. 8 is a front elevational view of another form of the invention;

FIG. 8a is a cross-sectional view taken on line 8a—8a of FIG. 8;

FIG. 9 is a front elevational view of another form of the invention showing an attached inserting tool.

FIGS. 1 and 1a illustrate one preferred dental implant form 10 constructed in accordance with this invention and comprising an implant portion 11 for im-

planting in the jaw bone of a patient, a head portion 13 for supporting a selected one of various dental appliances such as an artificial dental crown, and a neck 12 integrally connecting the head 13 with the implant portion 11. The implant portion 11 is in the form of a comparatively thin smooth faced blade having a straight shoulder edge 14 from which the neck 12 projects upwardly in a direction normal to the straight shoulder edge 14, a sharpened smoothly curved free edge 15 opposite the shoulder edge and left and right side edges 16 and 17 extending to the shoulder edge. For purpose of reference the length l of the blade will be considered to be the greatest distance across the blade 11 from side edge 16 to side edge 17; the height h of the blade will be considered to be the vertical distance from the shoulder edge 14 to the free edge 15 at the widest portion of the blade; the blade thickness t will be considered to be the distance across the shoulder edge 14 as seen in FIG. 1a; and the overall height H of the implant will be considered to be the vertical distance from the top 23 of the head 13 to the free edge 15. The height of the neck will be considered to be the distance from its juncture with the shoulder 14 to the base of the head 13. As shown in FIG. 1a the blade portion 14 is wedge shaped, tapering from the shoulder 14 at its thickest portion to the sharp free edge 15. The neck 12 is of uniform thickness for its entire height from the shoulder edge 14 to the base of the head portion 13. The head portion 13 is shown as a frustum of a polygonal solid whose side surfaces 24 are trapezoidal in shape. The head portion 13 may be of other forms such as frusto-conical within the scope of the invention but the polygonal solid is preferred since attachments fitted over the head of a polygonal solid will not turn on the head.

A primary feature of this invention is the provision of at least one aperture 18 in the blade 11 which interrupts the straight shoulder edge 14 on at least one side of the neck 12. Two apertures 18, 18 are provided in the blade 11 of implant 10, one on each side of the neck 12. The apertures 18 are provided so that bone may grow into the aperture when the implant is implanted in the jaw bone and interlock with the implant portion 11 to rigidly hold the implant in place. Since the shoulder edge 14 of the implant will normally be approximately adjacent the ridge of the jaw bone when implanted, gum tissue has a tendency to bulge into any apertures which interrupt the shoulder edge 14 unless means are provided to resist the bulging and spreading of gum tissue into the apertures. In the implant embodiment shown in FIGS. 1 and 1a shoulder portions 14a, 14a are provided which extend laterally from opposite sides of the neck 12 and overlie the apertures 18 so as to limit the entrance from the shoulder edge 14 into the apertures 18 to a comparatively narrow slot 18'. These shoulder portions 14a, 14a, resist the bulging and spreading of gum tissue into the apertures 18. Additional bone receiving apertures may be provided in the blade 11 such as the aperture 20 which interrupts the free edge 15 at its mid-section.

FIGS. 2 and 2a illustrate a modified implant embodiment 10a which differs only slightly from the embodiment shown in FIGS. 1 and 1a. The head 13 and neck 12 of the implant 10a are identical to the head and neck of implant 10 and the implant portion 11 of implant 10a differs from the implant portion 11 of implant 10 only with respect to shape and number of apertures along the free edge 15. The free edge 15 of implant 10a

is more sharply curved than the free edge of implant 10 so that the ends of the free edge smoothly merge with curved opposite side edges 16 and 17, and three apertures 20, 21 and 22 are provided which interrupt the free edge 15.

FIGS. 3 and 3a illustrate another implant embodiment 10b which includes two heads 13 and 13a connected by separate spaced necks 12 and 12a respectively with an implant portion 11 having a single aperture 18 located in the mid-section of the blade 11 between the necks 12. The blade 11 has an arcuately curved and sharpened free edge 15, an interrupted shoulder edge 14 and opposite straight vertical side edges 16 and 17. Shoulder portions 14a, 14a extend laterally from the necks 12 and 12a toward each other and overlap the aperture 18 so as to form a narrow entrance slot 18' into the aperture 18 from the shoulder edge 14.

FIGS. 4 and 4a illustrate another implant embodiment 10c which closely resembles implant embodiment 10b except that the necks 12 and 12a are spaced further apart and form a continuation of the side edges 16 and 17 respectively and the free edge 15 is a flatter curve and is interrupted by three apertures 20, 21 and 22.

FIGS. 5 and 5a illustrate still another implant embodiment 10d closely resembling the two headed implant 10c but having a removable shoulder cap 25 overlying the shoulder portions 14a, 14a and bridging the gap 18' therein providing the entrance to the aperture 18 from the shoulder edge. The shoulder cap 25 is channel shaped having spaced downwardly extending flanges 26, 27 connected by horizontal web 28. The spacing between the flanges 26 and 27 is just sufficient to receive the shoulder portions 14a, 14a therebetween and in frictional engagement therewith. The removable shoulder cap 25 is provided so that a dentist can modify the implant 10d at will by removing the cap from the shoulder portions 14a if it is desirable or replacing the cap 25 over the shoulder portions.

FIGS. 6 and 6a illustrate an implant embodiment which includes a crescent shaped blade 11 resembling embodiment 10a illustrated in FIGS. 2 and 2a. However, instead of having shoulder portions 14a, 14a which extend over apertures 18 it has notches 30 cut in the sides of neck 12, which notches form a shoulder for receiving one end of a pair of removable shoulder caps 25 which bridge over the apertures 18 along the interrupted shoulder edge 14. The shoulder caps 25 are similar to the shoulder cap 25 discussed with reference to FIGS. 5 and 5a, and the flanges 26 and 27 thereof frictionally engage the side surfaces of the blade 11 with the connecting web 28 resting on top of the shoulder edge 14. The shoulder caps 25 may be removed by the dentist if desired and the notches 30 will aid in retarding gum tissue protrusion into the apertures 18.

FIGS. 7 and 7a and 8 and 8a show essentially the same implant as shown in FIGS. 6 and 6a but with modified shoulder caps.

The shoulder caps 25a shown in FIGS. 7 and 7a include a flat web portion 28 having one end resting on the shoulder edge 14 and secured thereto by a removable screw fastener 31 and its other end resting on the base of a notch 30 cut in the neck 12 of the implant 10e. Ears 32 straddle the base of the notch 30 and fric-

tionally engage opposite sides of the elongated neck 12.

The shoulder caps 25b shown in FIGS. 8 and 8a are essentially like the shoulder caps 25 with the exception that the web 28 of caps 25b is provided with apertures 33 for receiving the end of a tool (not shown) in engagement therewith whereas the web 28 of cap 25 is solid.

FIG. 9 shows an implant 10f which is like the implant 10e except that it has a longer neck 12 which has two pairs of notches 30 and 34 vertically spaced along the neck. An implant inserting tool 35 having a pair of spaced legs 36—36 for straddling the crown portion 13 of the implant and fitting in the notches 30 or 34 on opposite sides of the neck is shown positioned in FIG. 9. The legs 36 of the tool 35 may be fixed as shown or they may be pivoted together. The inside corners of the legs 36 are configured to the shape of the notches 30 and 34.

Any one or all of the implants shown in FIGS. 1-9 may be provided with projections 37 (shown in FIG. 9) extending from the side edges of the implant base portion 11. These projections can be forced into uncut bone when the implant is inserted in a receiving slot in the jaw bone by proper manipulation of the implant.

What is claimed is:

1. An improved dental implant comprising an implant portion, at least one head portion and at least one neck integrally connecting said one head portion with said implant portion, said implant portion being in the form of a comparatively thin blade having a sharpened free edge, a shoulder edge opposite to said free edge, and opposite side edges connecting said free edge and said shoulder edge, said neck projecting from said shoulder edge oppositely from said free edge, said shoulder edge being interrupted by at least one aperture through said blade on at least one side of said neck and extending in the direction of said free edge, a shoulder portion extending from said neck to said aperture, said blade being symmetrically shaped with a single neck projecting from the midportion of said shoulder edge, a pair of apertures through said blade portion being provided which interrupt said shoulder edge, each aperture of said pair of apertures being located on an opposite side of said neck from the other aperture of said pair, and a pair of removable caps each removably secured to said shoulder edge and bridging a different aperture of said pair of apertures.

2. The dental implant set forth in claim 1 wherein said caps are channel shaped and frictionally engage said blade over said shoulder edge.

3. The dental implant set forth in claim 2 wherein said caps have recesses therein for receiving the end of a force applying tool.

4. The dental implant set forth in claim 1 wherein said caps each comprise a flat bar having ears projecting from opposite edges of said bar near one end and an aperture through said bar at its other end, each bar being positioned over a respective one of said apertures with the ears straddling said shoulder portion and the flat apertured end overlying said shoulder edge on the side of said aperture opposite said shoulder portion, and removable fastening means extending through said aperture and engaging said blade.

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