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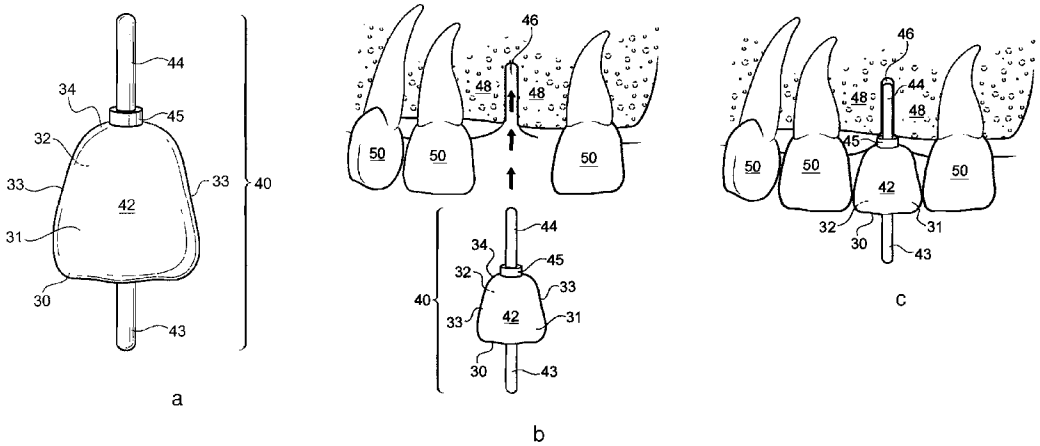
(54) **Title:** DENTAL IMPLANT SURGICAL GUIDE



(57) **Abstract:** A prefabricated dental implant surgical guide. The implant surgical guide comprises a tooth-shaped contour which simulates a natural tooth shape and the final prosthesis. An impression of an edentulous area and existing teeth of a patient is taken. A stone model of the impression is then made. A tooth-shaped contour(s) is selected from a tooth-shape and size selector kit comprising tooth-shaped contours, the tooth-shaped contours having central bores and corresponding to the edentulous area are secured to the stone model. A matrix of the stone model is formed with the tooth-shaped contours in place. The matrix is then removed from the stone model while retaining the selected tooth-shaped contour(s). Surgical drill holes are created in the matrix aligned with the central bores of the selected tooth-shaped contours to create the implant surgical guide. The matrix, now functioning as a surgical guide is then placed into the mouth of the patient. An osteotomy site is initiated by placing a surgical drill bur through the surgical drill holes of the matrix and through the central bores of the selected tooth-shaped contours, while the selected tooth-shaped contours are stabilized in their proper position by the matrix. The tooth-shaped contours can also be made of a radio opaque material, which when contained in the matrix and worn by the implant patient allow it to function as a dental scan appliance.

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DENTAL IMPLANT SURGICAL GUIDE

BACKGROUND

[0001] This application relates generally to oral implant surgery. More particularly the present invention relates to a surgical guide to be used during dental implant surgery which is used to effect correct placement of a dental implant.

[0002] In the healthy non-diseased mouth with natural teeth present, there exists a biologic relationship between the root of a tooth, the crown of a tooth, the bone surrounding the root and the gingiva (soft tissue) surrounding the bone, root and crown of a tooth. In nature, the shape and contour that the gingiva or soft tissue assumes and follows is dictated by the underlying presence and shape of bone. The bone contours around a natural tooth are actually scalloped, with the bone more apical on the facial and lingual aspects of the tooth and more coronal in the inter-proximal area (between the teeth). In a healthy mouth, this scalloping effect is dictated by the cemento-enamel junction (CEJ) of the tooth which itself is also scalloped. It is this scalloping of the bony architecture which lends itself to the formation and maintenance of proper gingival contours including the inter-dental papilla (the small triangular flesh portion adjacent the gum line and located between the teeth).

[0003] However, despite best efforts of a person, or because of lack of proper dental care, it may become necessary to replace teeth completely. In these cases, dental implant procedures have proven to be an effective method of restoring both form and function in patients having missing teeth. Implants provide a structure upon which a prosthetic tooth-shaped or teeth can be attached and secured in an otherwise edentulous (non-tooth) area. In contrast to using dentures or other tooth born fixed or removable dental bridge systems, implants have the advantage of maintaining bone and not being subject to decay.

[0004] Bone support is necessary for proper placement, securement and maintenance of a dental implant. Proper bone support around an implant is also necessary for the development and maintenance of healthy gingival contours, including papilla. Bone growth around an implant follows the shape of the bone-integrating part of the implant. A primary concern in implant dentistry is the precise placement of an implant in its proper location, with appropriate and accurate angulation and rotational position at the time of implant placement surgery. Even the slightest error in implant placement can result in significant complications and or compromises in the stability

of the implant, the maintenance of bone, the contours of the gingival tissues, placement of the final prosthesis, stability of the final prosthesis and the overall appearance of the patient's mouth.

[0005] Accordingly, it is desirable to provide a prefabricated dental implant surgical guide which ensures the proper placement of a dental implant or implants and its corresponding prosthesis (crown or crowns or bridges).

[0006] For such applications, the prefabricated dental implant surgical guide of the present invention may be configured as a surgical guide with a tooth-shaped contour with a post affixed to its apical end, or with a post as an integral part of the entire guide. This embodiment of a dental implant surgical guide is placed into an initial osteotomy site (a surgical procedure in which bone is cut or prepared for the placement of a dental implant) at the time of dental implant placement surgery, but prior to final implant body placement, to ensure and verify and or to correct proper location, angulation, and rotational position of an implant body prior to it's placement.

[0007] Various embodiments comprise a prefabricated dental implant placement surgical guide which, in one exemplary embodiment, has a post affixed to the apical end of an anatomically correct tooth-shaped form. This tooth-shaped form can be made to represent any tooth in the mouth in order to have accurate implant placement regarding the tooth to be replaced.

[0008] At the time of initial osteotomy site preparation, a small hole is prepared into the jaw bone using conventional dental implant surgical drills. The apical post of the surgical implant guide is inserted into the osteotomy site allowing verification of proper implant placement in location, angulation, and rotational position prior to implant body placement. This is accomplished by viewing the surgical guide in place, then comparing the tooth-contoured part of the surgical guide with some facial and/ or intra-oral guideline such as the adjacent teeth, gingiva, shape of the arch and lips etc. This allows for proper implant location and ultimately placement to be verified or corrected prior to implant body placement lending to a more stable, functional and esthetic prosthetic outcome. The apical post of the surgical guide can repeatedly be inserted into the osteotomy site, as the site is further developed and deepened to continuously verify proper position and location of the implant body prior to its placement. This process of trying in the surgical guide with further osteotomy site preparation is repeated until the appropriate final depth of the osteotomy site is

achieved. Thus the process of the present invention provides for a verified correct position, location and angulation of the osteotomy site, all prior to final implant body placement. If improper alignment is detected during this verification process, the osteotomy site location, angulation and position can be corrected with minimal damage to the bone.

[0009] In another embodiment, the prefabricated dental implant surgical guide can be converted into a provisional crown, a plurality of crowns, or a bridge. This is accomplished by removing the finger grip and apical post, or guide post, hollowing out the tooth-shaped contour of the guide, and relining the tooth-shaped contour of the surgical guide, then reversibly fastening via screw or cement, the tooth-shaped contour of the surgical guide to the abutment of an implant body.

[0010] In yet another embodiment, the surgical guide comprises a set of anatomically correct tooth-shaped forms each having an apical post and finger grip. The apical posts are graduated in length thus constituting a set of surgical guides that are sequentially used as an osteotomy site is created and deepened. In this way the surgical guide set can sequentially provide guidance that the osteotomy site is being correctly prepared.

[0011] In yet another exemplary embodiment, the prefabricated dental implant surgical guide comprises an anatomically correct tooth-shaped contour having a bore through the tooth-shaped contour into which an adjustable and removable post is placed or threaded. The apical end of the post protrudes through the tooth-shaped contour and can be lengthened by pushing or screwing the post through the bore. In this way the apical end is lengthened and can be placed into the gradually deepening osteotomy site to insure that the site is correctly prepared. The post can also be removed and an osteotomy drill passed thru the bore to allow for further preparation of the osteotomy site with the guide in place. In another embodiment of the present invention, a bottom face of the apical end of the movable post comprises a marking agent. In this embodiment, the surgical guide is placed in a desired position on the jaw bone at a proposed osteotomy site. Once the correct position of the surgical guide is established, the movable post is pressed downward to engage the bottom face of the apical end with the jaw bone thereby marking the location of the osteotomy site.

[0012] In still another exemplary embodiment, the prefabricated dental implant surgical guide comprises a number of anatomically correct tooth-shaped forms as a unitary surgical guide. In this case, for example and without limitation, a number of

tooth-shaped forms can be connected and tried into a series of side by side osteotomy sites as a unit. This allows multiple dental implants to be placed side by side with verification of proper location, angulation, and rotational position.

[0013] Thus various embodiments improve the dental implant placement process and allow for proper placement of a dental implant subsequent to osteotomy site preparation. Embodiments act as a prefabricated surgical guide and improve the placement of a dental implant. Embodiments further allow sequential placement of individual prefabricated implant surgical guides to develop sequential osteotomy sites for subsequent multiple side by side implant placement during dental implant placement surgery. Additional embodiments use unitary multi-tooth, tooth-shaped prefabricated implant surgical guides during dental implant placement surgery where more than one tooth is to be replaced with a dental implant. Other embodiments use a prefabricated dental implant surgical guide having adjustable apical posts for use with deepening osteotomy sites.

[0014] These and other embodiments will be come apparent to those skilled in the art upon review of the detailed description that follows.

DESCRIPTION OF THE FIGURES

[0015] **Figure 1a**, **1b**, and **1c** illustrate a prefabricated dental implant surgical guide configured as a tooth-shaped contour with a static post.

[0016] **Figures 2a** and **2b** illustrate another embodiment of a prefabricated dental implant surgical guide converted to and also used as an interim crown with posts that are removable.

[0017] **Figure 3a, 3b, 3c** and **3d** illustrate a prefabricated dental implant surgical guide as a series of tooth-shaped contours having graduated post lengths.

[0018] **Figure 4a, 4b** and **4c and 4d** illustrate another embodiment as a prefabricated dental implant surgical guide having a central bore with an adjustable, removable post.

[0019] **Figure 5** illustrates an embodiment, as illustrated in **Figures 1a-c, 2a-b, 3a-d** and **4a-d** being used in a multiple side by side format.

[0020] **Figure 6** illustrates another embodiment as a one piece multiple unit surgical guide.

[0021] **Figure 7a-c** illustrates an embodiment for the purpose of marking and identifying an osteotomy site.

[0022] **Figure 8 a-c** illustrates another embodiment for the purpose of marking and identifying an osteotomy site.

[0023] **Figure 9a-c** illustrates another embodiment for the purpose of marking and identifying an osteotomy site.

[0024] **Figure 10a-c** illustrates another embodiment for the purpose of marking and identifying an osteotomy site.

[0025] **Figure 11a-c** illustrates another embodiment for the purpose of marking and identifying an osteotomy site.

[0026] **Figures 12 a, 12b, 12c,12d and 12e** illustrate the impression taking and fabrication of a model of an edentulous area and potential implant site of a patient's mouth.

[0027] **Figure 13** illustrates the Implant Surgical Guide Tooth-Shape Contour and Size Selector kit.

[0028] **Figure 14** illustrates the appropriate radio opaque tooth-shaped contour of the implant surgical guide secured to a model replica of the implant patient's mouth in its proper angular and rotational position and location.

[0029] **Figures 15a, 15b, 15c** and **15d** illustrate the use of a matrix forming device used to fabricate a CAT scan appliance and implant surgical guide.

[0030] **Figure 16a and 16b** illustrate the tooth-shaped contour of the surgical guide contained within a matrix being used as a surgical guide.

DETAILED DESCRIPTION

[0031] As noted above, the present invention comprises a method and apparatus for insuring correct placement of dental implants during the surgical placement process. Referring now to **Figures 1a**, **1b**, and **1c,** the prefabricated dental implant surgical guide configured as a surgical guide with a tooth-shaped contour with a post affixed to its apical end is illustrated. The guide can be made of metal, plastic, acrylic, porcelain or some other material known to those of skill in the dental arts. Such materials will be collectively referred to herein as "dental material." This exemplary embodiment is placed into an initial osteotomy site at the time of implant placement surgery, prior to implant body placement to ensure and or to correct the proper location, angulation, and rotational position of the implant body.

[0032] **Figures 1a**, **1b**, and **1c** illustrate the dental implant aid in an exemplary alternative embodiment. As illustrated in **Figure 1a**, the dental implant aid, generally

referred to as **40** in this figure, is configured as a one piece surgical guide with a tooth-shaped contour **42**. The tooth-shaped contour **42** is further defined by its anatomical components, i.e. the incisal edge (for an anterior tooth) or occlusal table (for a posterior tooth) **30**, facial contour **31**, lingual contour **32**, interproximal aspect **33** and apical aspect **34**. Affixed to the apical end of tooth-shaped contour **42** is collar **45** which has apical post **44** extending above it. Affixed to the coronal end of tooth-shaped contour **42** is a protruding post which acts as finger grip **43**. Thus the surgical guide **40** can be held in the mouth and the tooth-shaped component **42** of guide **40** can be seen clearly by the surgeon during the course of surgery with out the surgeon's fingers obscuring the view.

[0033] This tooth-shaped contour **42** can be represented by any tooth-shaped shape found in the mouth (central incisors, lateral incisors, cuspids, premolars, and molars of both the upper and lower jaws) and can therefore be used as a surgical guide to verify implant body placement with respect to any tooth-shaped and its corresponding position in the mouth prior to implant placement. For example, **Figure 1b** represents a jaw bone **48** to which an osteotomy site **46** (a surgical procedure in which bone is cut or prepared for the placement of an implant) has been prepared in jaw bone **48**. As illustrated in **Figures 1b** and **1c**, by holding finger grip **43**, the apical post **44** of implant surgical guide **40** is placed into the osteotomy site **46** so that collar **45** of implant surgical **40** rests against jaw bone **48** at the opening of osteotomy site **46**. This is done at the time of implant placement surgery, but prior to implant body placement.

[0034] By using existing intra-oral guidelines as a reference (i.e. adjacent teeth **50**, lips, shape of the arch as but several examples), the tooth-shaped tooth-shaped contour **42** and its corresponding anatomic components of implant surgical guide **40** with apical post **44** in osteotomy site **46**, can be used to verify and/or correct the proper location, angulation, and rotational position of any implant body and it's corresponding system prior to it's insertion. This is accomplished by comparing the location, angulation, and position of the tooth-shaped tooth-shaped contour **42** and its corresponding anatomic components of the implant surgical guide **40** with some facial and/or intra-oral guideline or reference such as the adjacent teeth, gingiva, shape of the arch and lips, face etc., while apical post **44** of implant surgical guide **40** is engaged in osteotomy site **46**.

[0035] Verification of osteotomy site position, angulation, location, subsequent proper implant location and placement and proper prosthesis location, requires the

tooth-shaped tooth-shaped contour **42** of implant surgical guide 40 be in proper alignment with the facial and or intra-oral guide lines or references previously noted. This alignment is verified by comparing the position of the anatomic components of tooth-shaped contour **42**, for example, the incisal edge (for an anterior tooth) or occlusal table (for a posterior tooth) **30**, facial contour **31**, lingual contour **32**, interproximal aspect **33** and apical aspect **34** of tooth-shaped contour **42** of the surgical guide **40** while engaged in the mouth with facial and or intra –oral references previously noted.

[0036] If the alignment of the anatomic components of tooth-shaped contour **42** of surgical guide **40** are in harmony with and are symmetrical to the facial and or intra-oral references previously noted, osteotomy site location, position and angulation are verified, and osteotomy site and subsequent implant placement can be completed.

[0037] If there is disharmony and/or an asymmetrical position of the anatomic components of tooth-shaped contour **42** of the implant surgical guide **40** is noted with respect to the facial and or intra-oral references previously noted, a correction as to position and location can be made and verified prior to final implant placement.

[0038] It will be apparent to those skilled in the art that, not only can different tooth-shaped shapes be represented, but also different sizes of tooth-shaped contour **42** of the prefabricated dental implant surgical guide **40** can be used to conform to the size teeth and arch form of the dental implant patient.

[0039] Referring now to **Figures 2a** and **2b**, another alternate embodiment generally referred to as **51** is illustrated. In this embodiment, the prefabricated implant surgical guide is made of a dental material so that once implant placement has been verified and the implant body has been placed, either at the time of surgery or at a later date subsequent to healing, the surgical guide can be converted to a provisional crown as illustrated in **Figures 2a** and **2b**.

[0040] Referring again to **Figure 2a**, apical post **24** of implant guide **51** having a collar **25** is placed into osteotomy site **46** of jaw bone **48** to verify proper implant location and angulation prior to implant body placement as previously described in **Figures 1 a-c**.

[0041] Referring now to **Figure 2b**, implant body **52** is shown having been placed into jaw bone **48**. At the time of surgery or subsequent to surgical healing, the finger grip **23** and apical post **24** of implant surgical guide **51** are removed via a cutting procedure known in the art. The tooth-shaped contour **22** of implant surgical guide **51**

is then hollowed out so that a concavity **26** is formed on the internal aspect **27** of tooth-shaped contour **22** of implant guide **51**. At the time of surgery or subsequent to surgical healing utilizing either a 2-stage, 2-piece implant system, a one-stage, 2-piece implant system or a one piece, one-stage implant system, the concavity **26** of internal aspect **27** of tooth-shaped contour **22** of implant guide **51** is relined with a dental provisional material, known to those in the art (for example and without limitation, acrylic) to the abutment aspect **54** of implant body **52** to create a custom fitting, retentive provisional crown which can then be either cemented into place with some provisional dental cement (for example and without limitation zinc oxide-eugenol)) or screw retained.

[0042] Referring now to **Figures 3a**, **3b**, **3c** and **3d**, another embodiment of the prefabricated implant surgical guide, herein referred to as **53** having separate graduated apical post lengths is illustrated. In this embodiment, implant guide **53** exists in a multiple set format with apical posts **13**, **15**, and **17**, connected to tooth-shaped tooth-shaped contours **12**, **14**, and **16** respectively via collars **7**, **9**, and **11** respectively. Tooth-shaped Tooth-shaped contours **12**, **14** and **16** are further defined by their anatomical components, that is, the incisal edge (for an anterior tooth) or occlusal table (for a posterior tooth-shaped) **1a**, **1b** and **1c** respectively, facial contours **2a**, **2b** and **2c** respectively, lingual contours **3a**, **3b**,and **3c** respectively, interproximal aspects **4a**, **4b** and **4c** respectively and apical aspects **5a**, **5b** and **5c** respectively.

[0043] The tooth-shaped contours **12**, **14** and **16** can be represented in the form of any tooth-shaped shape found in the mouth (central incisors, lateral incisors, cuspids, premolars, and molars of both the upper and lower jaws) and can therefore be used as a surgical guide to verify implant body placement with respect to any tooth-shaped and its corresponding position in the mouth prior to implant placement.

[0044] Apical posts **13**, **15**, and **17** increase in length to be used as described in **Figures 3a**, **3b**, **3c** and **3d**. Finger grips **6**, **8**, and **10**, respectively allow for manipulation of the surgical guide during the surgical implant placement procedure.

[0045] Referring now to **Figure 3b**, the use of the embodiment of **Fig. 3a** is illustrated. An initial oseotomy site **46** of minimum depth is prepared into jaw bone **48**. By placing implant guide **53** with the shortest apical post **13** first into initial osteotomy site **46**, an initial and preliminary evaluation as to proper implant position, location and angulation can be done. At this time, verification and or correction to the

initial osteotomy site **46** can be done with minimal trauma to jaw bone **48**. This is accomplished by comparing the location, angulation and position of the tooth-shaped contour **12** of the surgical guide 53 with some facial and/ or intra-oral guideline or reference such as the adjacent teeth, gingiva, shape of the arch and lips, face etc. with apical post **13** of surgical guide **53** engaged in osteotomy site **46**.

[0046] To verify osteotomy site position, angulation, location, subsequent proper implant location, angulation and placement and ultimately proper prosthesis location, requires the tooth-shaped contour **12** of implant surgical guide **53** be in proper alignment with the facial and or intra-oral guide lines or references previously stated. This alignment is verified by comparing the anatomic components of tooth-shaped contour **12**, that being the incisal edge or occlusal table **1a**, facial contour **2a**, lingual contour **3a**, interproximal aspect **4a** and apical aspect **5a** of tooth-shaped contour **12** of surgical guide **53** while engaged in the mouth with facial and or intra-oral references previously noted.

[0047] If the alignment of the anatomic components of tooth-shaped contour **12** of surgical guide **53** are in harmony with and are symmetrical to the facial and or intra-oral references previously noted, osteotomy site location, position and angulation are verified and osteotomy site and subsequent implant placement can be completed.

[0048] If there is disharmony and or an asymmetrical position of the anatomic components of tooth-shaped contour **12** of implant surgical guide **53** is noted with respect to the facial and or intra-oral references previously noted, a correction as to position, angulation and location of the osteotomy site can be made and verified prior to final implant placement.

[0049] As illustrated in **Figs 3c** and **3d**, as the osteotomy site **46** is deepened and developed, the implant guide **53** with the increasing apical post lengths **15** and **17** can be tried into deepening osteotomy site **46** to further verify and or to correct the position and or angulation of osteotomy site **46** prior to final implant body placement. This is accomplished by comparing the position of tooth-shaped contours **12**, **14**, and **16** (as the osteotomy site is deepened) of guide **53** with some other facial or intra-oral reference point (i.e. other teeth, gingiva, shape of the arch, lips, face, etc.) with posts **13**, **15**, and **17** of guide **53** sequentially engaged in osteotomy site **46**. This verification process is accomplished as previously described in Fig. **3b**. In this fashion, osteotomy site **46** is gradually prepared (deepened) and continuously verified

during the preparation process to ensure accuracy in final location, angulation and position of the implant body and final prosthesis prior to its placement.

[0050] Referring now to **Figure 4a, 4b, 4c and 4d**, yet another embodiment of the prefabricated dental implant surgical guide generally referred to as **70** is illustrated. Implant surgical guide **70** comprises a tooth-shaped contour **62**, collar **65**, finger grip **63** and apical post **64**. The tooth-shaped contour **62** is further defined by its anatomical components: the incisal edge (for an anterior tooth) or occlusal table (for a posterior tooth) **61**, facial contour **58**, lingual contour **66**, interproximal aspect **69** and apical aspect **71**.

[0051] The tooth-shaped contour **62** can be represented by any tooth-shaped shape found in the mouth (central incisors, lateral incisors, cuspids, premolars, and molars of both the upper and lower jaws) and can therefore be used as a surgical guide to verify implant body placement with respect to any tooth-shaped and its corresponding position in the mouth prior to implant placement.

[0052] In this embodiment, the surgical guide **70** has a central bore **60** which extends the entire length of guide **70** (through tooth-shaped contour **62** and collar **65**). This central bore **60** can be either smooth or threaded. An adjustable and removable post generally referred to as **67**, comprises a central portion **68** which is located in central bore **60,** finger grip portion **63** that extends beyond the coronal end of guide **70** and apical post portion **64** that extends beyond the apical end of guide **70**. The central post portion **68** of post **67** remains in the central bore **60**. Central post portion **68** and central bore **60** can be either smooth or threaded. If smooth, central post portion **68** of post **67** may be pushed through the central bore **60** thereby adjusting the length of apical post **64**. If threaded, central post portion **68** of post **67** may be turned through central bore **60** thereby adjusting the length of apical post **64**. In this fashion apical post portion **64** of adjustable removable post **67** can be adjusted and made shorter or longer to fit into a developing osteotomy site **46** to verify or correct final implant body location, position and angulation in jaw bone **48** prior to implant body placement.

[0053] During this process, as in other embodiments described above, proper implant location and position can be verified by comparing the position of tooth-shaped contour **62** of guide **70** with some other facial or intra-oral reference point (i.e. other teeth, gingiva, shape of the arch, lips, face, etc.) with apical post **64** of guide **70** engaged in osteotomy site **46**.

[0054] Referring now to figure **4b**, an osteotomy site is identified, and an initial osteotomy site **46** of minimum depth is prepared in jaw bone **48**. Surgical guide **70** is placed over osteotomy site **46**. Finger grip portion **63** of adjustable, removable post **67** is pushed or turned so that central post portion **68** of adjustable, removable post **67** moves through central bore **60** increasing the length of apical post portion **64** of adjustable, removable post **67** until it engages the base **49** of osteotomy site **46**. By comparing the position of tooth-shaped contour **62** of guide **70** with some other facial or intra-oral reference point (i.e. other teeth **50**, gingiva, shape of the arch, lips, face, etc.), with apical post portion **64** of adjustable, removable post **67** of guide **70** engaged in osteotomy site **46**, an initial verification or correction of position and or angulation of osteotomy site **46** can be done with minimal trauma to jaw bone **48**.

[0055] This is accomplished by comparing the location, angulation and position of the tooth-shaped contour **62** of the surgical guide **70** with some facial and/or intra-oral guidelines or references such as the adjacent teeth, gingiva, shape of the arch and lips etc. with apical post **64** of surgical guide **70** engaged in osteotomy site **46**.

[0056] To verify osteotomy site position, angulation, location, subsequent proper implant location, angulation and placement and ultimately proper prosthesis location, requires tooth-shaped contour **62** of prefabricated dental implant surgical guide **70** be in proper alignment with the facial and or intra-oral guide lines or references previously stated. This alignment is verified by comparing the anatomic components of tooth-shaped contour **62**, that being the incisal edge or occlusal table **61**, facial contour **58**, lingual contour **66**, interproximal aspect **69** and apical aspect **71** of tooth-shaped contour **62** of surgical guide **70** while engaged in the mouth, with facial and or intra-oral references previously stated.

[0057] If the alignment of the anatomic components of tooth-shaped contour aspect **62** of surgical guide **70** are in harmony with and are symmetrical to the facial and or intra-oral references previously noted, osteotomy site location, position and angulation are verified and osteotomy site and subsequent implant placement can be completed.

[0058] If there is disharmony and or an asymmetrical position of the anatomic components of tooth-shaped contour **62** of implant surgical guide **70** is noted with respect to the facial and or intra-oral references previously noted, a correction as to position and location can be made and verified prior to final implant placement.

[0059] Referring now to **Fig. 4c**, as osteotomy site **46** is further deepened, guide **70** can repeatedly be placed over osteotomy site **46**, with apical post portion **64** of adjustable, removable post **67** further lengthened into osteotomy site **46** by turning or pushing finger grip portion **63** of adjustable, removable post **67 (See Fig. 4a)** to move central post portion **68** of adjustable, removable post **67** thru central bore **60**, thus providing a means of continuous verification and or correction of position and or angulation of osteotomy site **46** prior to final implant body placement. Again, this is accomplished by comparing the position of tooth-shaped contour **62** of guide **70** with some other facial and or intra-oral reference point (i.e. other teeth **50**, gingiva, shape of the arch, lips, face, etc.) with apical post portion **64** of adjustable, removable post **67** of guide **70** engaged in osteotomy site **46**. This verification process is accomplished as previously described in **Fig. 4b**.

[0060] Referring now to **Fig. 4d**, adjustable, removable post **67** can be removed from surgical guide **70**. Surgical guide **70** can be held in place in the mouth at osteotomy site **46** with a buccal and or lingual finger grip **45**. By stabilizing guide **70** with buccal and or lingual finger grip **45**, osteotomy bur **47** attached to surgical drill **59** can be placed thru central bore **60** of tooth-shaped contour **62** of implant guide **70** and activated allowing further preparation and continuous verification of osteotomy site **46** with surgical guide **70** in place in the mouth.

[0061] This verification process is accomplished as previously described in **Fig. 4b.**

[0062] As more fully explained below, in another embodiment, a bottom face of the apical end of the movable post comprises a marking agent. In this embodiment, the prefabricated dental implant surgical guide is placed in a desired position on the jaw bone at a proposed osteotomy site before a hole is drilled. Once the correct position and location of the osteotomy site is established, the movable post is pressed downward to engage the bottom face of the apical end with the jaw bone thereby marking the location of the osteotomy site.

[0063] Referring now to **Fig. 5**, embodiments as illustrated in **Figs. 1-4** is described when placing multiple implants in a side by side format. Initial osteotomy sites **46a-c** are identified, made and verified into jaw bone **48** as previously described. As an example, the most mesial osteotomy site **46a** could be prepared and verified or corrected as previously described. Leaving the implant guide **40a** in place, the next implant osteotomy site **46b** can be prepared and verified or corrected as previously described. Now, leaving that implant guide **40b** in place, another osteotomy site **46c**

can be prepared with implant guide **40c** put in its place and verified or corrected as previously described. This type of verification process can be used to place implants side by side in a partially edentulous arch and or in a continuous fashion all the way around a completely edentulous arch. Thus all potential multi-unit side by side implant sites can be properly and accurately prepared, verified and or corrected prior to implant body placement.

[0064] **Fig. 6** illustrates another embodiment of the present invention generally referred to as **72**. In this embodiment, the surgical guide is formatted as a one piece, multi-unit surgical guide having tooth-shaped contours **72a**, **72b**, and **72c**. Affixed to these tooth-shaped contours are collars **75a**, **75b**, and **75c**, apical posts **74a**, **74b**, and **74c** respectively, and corresponding finger grips **73a**, **73b**, and **73c** respectively. The purpose of this embodiment is to guide the placement of multiple, side by side implants in a multi tooth-shaped edentulous site. Although formatted as such, guide**72** can be fabricated and used as described in **Figs. 1-4**. In this embodiment, a proper guide size **72** and corresponding contour would be chosen that corresponds to the size and location of the edentulous site. Multiple initial osteotomy sites **46a-c** would be made in jaw bone **48** with apical posts **74a**, **74b**, and **74c** tried in osteotomy sites **46a-c** to verify and or correct position, angulation and location of osteotomy sites **46a-c** prior to implant body placement as previously described in **Figures 1-4**.

[0065] As will be appreciated by those skilled in the art, the multi-unit surgical guide may use movable (adjustable) posts as previously described in place of the fixed posts illustrated in **Fig. 6.**

[0066] Thus the embodiments as described may be used to guide the placement of dental implants in a single tooth-shaped format, multi tooth-shaped format and fully edentulous format.

[0067] Referring now to **Fig. 7a**, another embodiment of the prefabricated dental implant surgical guide **40** is illustrated. Surgical guide **40** as depicted in **Fig. 1a**, has fixed apical post **44** with bottom end face **75** and marking agent **77** on it for the purpose of marking and identifying an osteotomy site **46**.

[0068] Referring now to **Figs. 7b** and **7c** use of the embodiment of **Fig. 7a** is illustrated. By holding coronal post **43** and by using tooth-shaped contour **42** as a guide as previously described, osteotomy site **46** in jaw bone **48** can be located and demarcated by pressing end face **75** with marking agent **77** of fixed apical post **44** on top of jaw bone **48** leaving a mark denoting the osteotomy site **46**. Osteotomy bur **47**

of surgical drill **59** can then be used to initiate osteotomy site preparation. Further preparation, verification and completion of the osteotomy site **46** via drill **59** can then be accomplished as previously described in **Figs. 1b** and **1c**.

[0069] Referring now to **Fig. 8a**, another embodiment of the prefabricated dental implant surgical guide **51** is illustrated. In this embodiment, surgical guide **51**, comprises a fixed apical post **24** with bottom end face **85** and marking agent **87** on it for the purpose of marking and identifying an osteotomy site **46**.

[0070] Referring now to **Fig. 8b** and **8c**, by holding coronal post **23** and by using tooth-shaped contour **22** as a guide as previously described, osteotomy site **46** in jaw bone **48** can be located and demarcated by pressing bottom end face **85** with marking agent **87** of fixed apical post **24** on top of jaw bone **48** leaving a mark denoting the osteotomy site **46**. Osteotomy bur **47** of surgical drill **59** can then be used to initiate osteotomy site preparation. Subsequent to osteotomy site preparation and implant placement, the tooth-shaped contour **22** of guide **51** can be converted to a provisional crown (immediate or delayed) as previously described in **Fig. 2b**.

[0071] Referring now to **Fig. 9a**, yet another embodiment of the prefabricated dental implant surgical guide **53** is illustrated. Surgical guide **53** comprises a fixed apical post **13** with bottom end face **95** and marking agent **97** on it for the purpose of marking and identifying an osteotomy site **46**.

[0072] Referring now to **Figs. 9b** and **9c**, use of the surgical guide **53** is illustrated. By holding coronal post **6** and by using tooth-shaped contour **12** as a guide as previously described, osteotomy site **46** in jaw bone **48** can be located and demarcated by pressing end face **95** with marking agent **97** of fixed apical post **13** on top of jaw bone **48** leaving a mark denoting the osteotomy site **46**. Osteotomy bur **47** of surgical drill **59** can then be used to initiate osteotomy site preparation. Further preparation, verification and completion of the osteotomy site **46** can then be accomplished as previously described in **Figs. 3b, 3c** and **3d**.

[0073] Referring now to **Fig. 10a**, another embodiment of prefabricated dental implant surgical guide **70** is illustrated. Surgical guide **70** comprises an adjustable removable post **67** with apical post aspect **64** with a bottom end face **102**, and marking agent **104** on it for the purpose of marking and identifying an osteotomy site **46**.

[0074] Referring to **Figs. 10b** and **10c**, use of the prefabricated dental implant surgical guide is illustrated. By pushing or turning coronal post **63** of adjustable

removable post **67** so that central post portion **68** moves through central bore **60**, thereby lengthening apical post portion **64** and by using tooth-shaped contour **62** as a guide as previously described, osteotomy site **46** in jaw bone **48** can be located and demarcated by pressing end face **102** with marking agent **104** of apical post aspect **64** of adjustable removable post **67** on top of jaw bone **48** leaving a mark denoting the osteotomy site **46**. Osteotomy bur **47** of surgical drill **59** can then be used to initiate osteotomy site preparation. Further preparation, verification and completion of the osteotomy site can then be accomplished as previously described in **Figs. 4b, 4c** and **4d**.

[0075] Referring now to **Fig. 11a**, still another embodiment of prefabricated dental implant surgical guide **72** is illustrated. The multi unit one piece surgical guide **72** comprises fixed apical posts **74a**, **74b**, and **74c** with bottom end faces **109a**, **109b** and **109c** and with marking agents **110A**, **110b**, and **110c** on them for the purpose of marking and identifying an osteotomy sites **46a, 46b** and **46c.**.

[0076] Referring now to **Figs. 11b** and **11c**, use of the prefabricated dental implant surgical guide is illustrated. By holding coronal posts **73a**, **73b** and or **73c** and by using tooth-shaped contour **72a**, **72b** and **72c** as a guide as previously described, osteotomy sites **46a, 46b** and **46c** in jaw bone **48** can be located and demarcated by pressing end faces **109a**, **109b** and **109c** with marking agents **110a**, **110b** and **110c** of fixed apical posts **74a**, **74b** and **74c** on top of jaw bone **48** leaving marks denoting the osteotomy sites **46a, 46b** and **46c**. Osteotomy bur **47** of surgical drill **59** can then be used to initiate osteotomy site preparations. Further preparation, verification and completion of the osteotomy sites can then be accomplished as previously described in **Figs. 1-4**.

[0077] Yet another embodiment of the prefabricated dental implant surgical guide generally referred to as **70 (Fig. 4a)** can be constructed in a manner to assist in other dental implant procedures. For example, and referring to **Fig. 4a,** the tooth-shaped contour **62** of surgical guide **70** can be made of a radio opaque material (as but one example, Barium Sulfate) thus making it visible on x-ray, panorex and or some type of CAT scan or MRI recording. This would then allow the tooth-shaped contour **62** of the surgical guide 70 to be used in the fabrication of and as part of a CAT scan (or other type of scan) appliance as more fully set forth below.

[0078] Referring now to Figures **12a, 12b, 12c, 12d, and 12e,** a patient may have a partial or fully edentulous area **500 (Fig. 12a)**. An impression is made of the

edentulous area using an impression tray **504** and any known dental impression material **502(Fig. 12b and 12c)**. This creates a dental impression **506** of the existing teeth of the patient together with the edentulous area **500** (partial or fully) of a patient's mouth where implants are being considered **(Fig. 12d)**. The dental impression **506** can be poured with any of the known dental stones to create a stone model replica **508** of the partially or fully edentulous area and or arch of the patient's mouth **(Fig. 12e)**. The reference to a "stone" model is not meant as a limitation. Other dental materials are within the scope of the embodiments described in this application. In this application the term "model replica" is meant to convey model fabrication using other dental materials

[0079] Referring now to **Fig. 13** the Implant Surgical Guide Tooth-Shape Contour and Size Selector kit **510** is illustrated. The Implant Surgical Guide Tooth-Shape Contour and Size Selector kit **510** comprises all teeth of both upper and lower arches (central incisors, lateral incisors, canines, premolars and molars of both upper and lower arches) and various sizes of all teeth in both upper and lower arches. Using the shape and size selector kit **510**, the appropriate radio opaque tooth-shaped contour **62** and size that corresponds to the edentulous area **500 (Fig. 12a)** of the patient's mouth can be selected to fabricate a CAT scan appliance **(Fig. 15d, 600)** and subsequent surgical guide, **Fig. 16a, 602** to be used at the time of implant placement as will be described below.

[0080] Now referring to **Fig. 14**, the corresponding radio opaque tooth-shaped shape contour **62** and size of implant surgical guide **70** chosen is secured to model replica **508** in its appropriate position.

[0081] Referring to **Figs. 15A, 15B, 15C,** and **15D** formation of a dental matrix is illustrated. Matrix forming devices such as the "Tray Vac" from Buffalo Dental as but one example work on a principle of heat and vacuum. **(Fig. 15a, 512)**). A corresponding matrix forming material is heated by the Tray Vac machine. Then, with the dental model in place, a vacuum and suction action is activated causing the heat softened matrix material to mold and form around the dental model. The formed matrix material, when properly trimmed and adjusted, forms a detailed replication in the form of a matrix of a patient's dentition which will then fit back into the patient's

mouth. Using a matrix forming device **512 (Fig. 15a)** and it's corresponding matrix forming material **514**, **(Fig. 15b)** a matrix **516** of a partial or fully edentulous arch **500** is made on stone model replica **508** with radio opaque tooth-shaped contour **62** of implant surgical guide**70** in place on stone model replica **508 (Fig. 15b)**. When matrix **516** is removed from model replica **508**, the radio opaque tooth-shaped contour **62** of the implant surgical guide**70** that had been on stone model replica **508**, is now retained inside matrix **516. (Fig. 15c)**.

[0082] Matrix **516** with radio opaque tooth-shaped contour **62** of implant surgical guide **70** contained there in, can then be placed back into the patient's partially or fully edentulous mouth **500** and worn during any x-ray, panorex, or CAT scan or MRI type recording procedure, thereby functioning as CAT scan appliance **600** to be used in conjunction with any of the previously mentioned or other scan recording procedures. **(Figure 15D)**. The use of a CAT scan is but one example of a type of scan that might be used. This is not meant as a limitation as other types of dental scans are also anticipated herein.

[0083] Due to the radio opacity of tooth-shaped contour **62** of the implant surgical guide **70**, the tooth-shaped contour **62** and therefore the final prosthesis which the tooth-shaped contour **62** of the implant surgical guide **70** represents, can be visualized on and as part of a radiograph after some type of x-ray, CAT scan, panorex or MRI recording. The radio opacity of tooth-shaped contour **62** can be visualized directly on x-ray film, via digital x-ray on a computer or with the aid of some implant related computer generated software.

[0084] With the aid of this visualization process simulating the final prosthesis, both the surgeon and restoring doctors have the ability to diagnose the presence or absence of adequate soft (gingival) and hard (bone) tissues around a potential implant site or sites prior to implant placement surgery. In this manner the need for augmentation procedures or the ability to proceed with implant placement surgery can be diagnosed, verified and treatment planned.

[0085] Referring now to **Figures 16a** and **16b**, at the time of implant placement surgery, the matrix **516** with tooth-shaped contour **62** of the implant surgical guide **70**

contained there in, can be placed back into the patient's partial or fully edentulous arch **500**. A hole **518** can then be made in matrix **516** over the central bore **60** of tooth-shaped contour aspect **62** of the implant surgical guide **70,** thereby converting matrix **516,** to a surgical guide **602.** Osteotomy bur **47** attached to surgical drill **59** can then pass through hole **518** of matrix **516** and then thru central bore **60** of tooth-shaped contour **62** of implant surgical guide **70** while it is contained and stabilized in its proper position in matrix **516**. Single or multiple osteotomy sites **46** including a full arch can be initiated, verified and prepared in this way.

[0086] A method and apparatus for using a prefabricated implant surgical guide during dental implant placement surgery has now been illustrated. It will also be understood that the invention may be embodied in other specific forms without departing from the scope of the invention disclosed and that the examples and embodiments described herein are in all respects illustrative and not restrictive. Those skilled in the art of the present invention will recognize that other embodiments using the concepts described herein are also possible. Further, any reference to claim elements in the singular, for example, using the articles "a," "an," or "the" is not to be construed as limiting the element to the singular.

WHAT IS CLAIMED IS:

1. A prefabricated dental implant surgical guide comprising:

a tooth-shaped contour having an apical end and coronal end;

a post affixed to the apical end of the tooth-shaped body; and

wherein the apical end post is dimensioned to fit within a hole created by a surgical drill during an implant osteotomy site preparation procedure; and whereupon insertion of the apical end post into the implant osteotomy site, a proper positional, rotational and angular alignment of the implant to the osteotomy site is verified.

2. The prefabricated dental implant surgical guide of claim 1, wherein the apical end post comprises a length approximating a finished depth of the osteotomy site.

3. The prefabricated dental implant surgical guide of claim 1, further comprising a coronal post affixed to the coronal end of the tooth-shaped body, wherein the coronal post is used for positioning the tooth-shaped contour and the apical post of the implant surgical guide into the implant osteotomy site.

4. The prefabricated dental implant surgical guide of claim 1, wherein the shape of the tooth-shaped contour is selected from the group consisting of a central incisor shape, a lateral incisor shape, a cuspid shape, a premolar shape, and a molar shape of both upper and lower jaws.

5. The prefabricated dental implant surgical guide of claim 1, wherein the apical end post and coronal end post posts are removable from the tooth-shaped contour of the surgical guide thereby allowing the tooth-shaped contour to be attached to an abutment aspect of a dental implant, thereby serving as a provisional crown.

6. The prefabricated dental implant surgical guide of claim 1, wherein the apical end post comprises a bottom face, the bottom face further comprising a marking agent for marking and locating an initial implant osteotomy site.

7. A prefabricated dental implant surgical guide comprising:

a tooth-shaped body, wherein the tooth-shaped contour comprises a central bore along an axis extending from a center of an apical end through a center of a coronal end; and

a post located in the bore, wherein the post comprises a post apical end extending beyond the apical end of the tooth-shaped contour, and a post coronal end extending beyond the coronal end of the tooth-shaped contour and wherein the post is adjustable by moving the post along the axis of the central bore; and

wherein the post apical end is adjusted thereby extending the post apical end to a hole created by a surgical drill during an osteotomy site preparation procedure; and

whereupon insertion of the post apical end in to the osteotomy site, a proper positional, rotational and angular alignment of the implant to the osteotomy site is verified.

8. The prefabricated dental implant surgical guide of claim 7, wherein the post coronal end is used for positioning the tooth-shaped contour and apical post end of the surgical guide into the osteotomy site.

9. The prefabricated dental implant surgical guide of claim 7, wherein the adjustable removable post is removable and wherein an implant osteotomy drill can be placed within the central bore to initiate an osteotomy site preparation.

10. The prefabricated dental implant surgical guide of claim 9, wherein the adjustable removable post can be interchanged with the osteotomy drill to continuously verify implant osteotomy site location and angulation during the osteotomy preparation process.

11. The prefabricated dental implant surgical guide of claim 7, further comprising a handle on the tooth-shaped contour used to stabilize the tooth-shaped contour during osteotomy site preparation through the central bore.

12. The prefabricated dental implant surgical guide of claim 7, wherein the adjustable removable post is removable from the tooth-shaped contour of the surgical guide,

allowing the tooth-shaped contour to be attached to the abutment aspect of a dental implant and thereby serve as a provisional crown.

13. The prefabricated dental implant surgical guide of claim 7, wherein the shape of the tooth-shaped contour is selected from the group consisting of a central incisor shape, a lateral incisor shape, a cuspid shape, a premolar shape, and a molar shape of both upper and lower jaws.

14. The prefabricated dental implant surgical guide of claim 7, wherein the apical end post comprises a bottom face comprising a marking agent for marking and locating an initial osteotomy drill site.

15. A method for dental implant surgery comprising:

placing a prefabricated implant surgical guide in the mouth of a recipient at the implant site;

the prefabricated implant surgical guide comprising a tooth-shaped contour having an apical end and coronal end; and

a post affixed to the apical end of the tooth-shaped contour, the apical end post comprising a bottom face and a marking agent on the bottom face;

marking an implant osteotomy site via the marking agent on the bottom face of the apical post;

drilling a hole at the osteotomy site to an initial depth;

placing the prefabricated implant surgical guide apical end into the hole at the osteotomy site, wherein the apical end post is dimensioned to fit within the hole of the osteotomy site; and

verifying the positional and angular alignment of the osteotomy site upon insertion of the apical end post into the hole of the osteotomy site.

16. The method for dental implant surgery of claim 15, wherein the apical end post comprises a length approximating a finished depth of the osteotomy site.

17. The method for dental implant surgery of claim 15, wherein verifying the alignment of the osteotomy site comprises verifying the proper location, angulation, and rotational position of the tooth-shaped contour, by comparing the tooth-shaped

contour of the prefabricated dental implant surgical guide to other dental features of a patient, with the apical end post of the surgical guide engaged in the osteotomy site.

18. The method for dental implant surgery of claim 15, wherein the tooth-shaped contour is selected from the group consisting of a central incisor shape, a lateral incisor shape, a cuspid shape, a premolar shape, and a molar shape of an upper and lower jaw.

19. The method for dental implant surgery of claim 15, further comprising placing the tooth-shaped contour apical end at a proposed osteotomy site, causing the bottom face of the apical post to contact a jaw bone at the proposed osteotomy site thereby marking a drill site at the osteotomy site with the marking agent.

20. A method for dental implant surgery using a prefabricated dental implant surgical guide comprising a tooth-shaped contour having an apical end and associated bottom face and a coronal end, the tooth-shaped contour comprising a central bore along an axis extending from a center of an apical end through a center of a coronal end and an adjustable and removable post located in the central bore, wherein the post comprises a post apical end that extends beyond the apical end of the tooth-shaped contour and a post coronal end that extends beyond the coronal end of the tooth-shaped body, where in the method comprises:

placing the tooth-shaped contour in the mouth of a recipient at the implant site;

marking an implant osteotomy site via a marking agent on the bottom face of the apical end of the adjustable post;

drilling a hole at an osteotomy site to an initial depth;

placing the post apical end into the hole at the osteotomy site;

adjusting the length of the post apical end to the initial depth of the hole at the osteotomy site by manipulating the coronal end thereby extending the post apical end to the initial depth of the hole at the osteotomy site; and

verifying the alignment of the hole at the osteotomy site upon insertion of the apical end post into the hole at the osteotomy site by comparing the tooth-shaped contour position of the surgical guide to other dental features of a patient.

21. The method for dental implant surgery of claim 20, wherein placing the adjustable removable post apical end of the tooth-shaped contour into the hole at the osteotomy site comprises positioning the post apical end of the tooth-shaped contour into the hole at the site using the coronal end of the adjustable post to position the surgical guide.

22. The method for dental implant surgery of claim 20, further comprising:

deepening the osteotomy site hole, and

verifying the location, position and angulation of the osteotomy site by manipulating the coronal end of the adjustable removable post, thereby allowing the apical end to engage the depth of the osteotomy site; and

comparing the tooth-shaped contour position to other dental features of a patient.

23. The method for dental implant surgery of claim 20, further comprising:

removing the adjustable removable post from the central bore of the tooth-shaped body; and

placing an osteotomy drill placed thru the central bore of the tooth-shaped contour while the tooth-shaped contour is engaged in the mouth of the recipient, thereby allowing initial depth osteotomy site development.

24. The method for dental implant surgery of claim 23, further comprising:

removing the adjustable removable post from the central bore of the tooth-shaped body; and

placing an osteotomy drill placed thru the central bore of the tooth-shaped contour while the tooth-shaped contour is engaged in the mouth of the recipient, thereby allowing further osteotomy site depth development.

25. The method for dental implant surgery of claim 20, wherein the shape of the tooth-shaped contour is selected from the group consisting of a central incisor shape, a lateral incisor shape, a cuspid shape, a premolar shape, and a molar shape of an upper and lower jaw.

26. A prefabricated dental implant surgical guide comprising:

a matrix formed around a tooth-shaped contour, the matrix created from a model replica of a patient's existing dentition including an edentulous area;

the matrix further adapted to hold the tooth-shaped contour corresponding to a required implant site;

the tooth-shaped contour having an apical end, a coronal end and a central bore, the central bore dimensioned to permit passage of a surgical drill bur during an preliminary implant osteotomy site preparation procedure for the required implant site.

27. The prefabricated dental implant surgical guide of claim 26, wherein the tooth-shaped contour comprises a radio-opaque material whereby the prefabricated dental implant surgical guide functions as radiographic appliance.

28. The prefabricated dental implant surgical guide of claim 26, wherein the matrix further comprises a hole in the matrix located over the central bore of the tooth-shaped contour corresponding to the required implant site, whereby the surgical drill bur is inserted through the hole in the matrix into the central bore of the tooth-shaped contour while the matrix is in place in the mouth of the patient, to create an osteotomy site while the tooth-shaped contour is retained in its proper stabilized position in the matrix.

29. The prefabricated dental implant surgical guide of claim 26, wherein the shape of the tooth-shaped contour is selected from the group consisting of a central incisor shape, a lateral incisor shape, a cuspid shape, a premolar shape, and a molar shape of both upper and lower jaws.

30. A method for dental implant surgery using a prefabricated dental implant surgical guide comprising a tooth-shaped contour having an apical end and associated bottom face and a coronal end, the tooth-shaped contour comprising a central bore along an axis extending from a center of an apical end through a center of a coronal end, wherein the method comprises:

creating a model replica of a patient's existing dentition including an edentulous area;

placing the corresponding tooth-shaped contour of the surgical guide on the edentulous area of the model replica corresponding to the implant site of the patient's mouth;

attaching the tooth-shaped contour of the surgical guide to the edentulous area of the model replica corresponding to the implant site of the patient's mouth;

creating a matrix of the model replica of the patient's existing dentition including the edentulous area, with the tooth-shaped contour in place;

retaining the tooth-shaped contour of the surgical guide in the matrix in its proper location, angulation and position corresponding to the implant site;

placing the matrix, with the tooth-shaped contour in place into the mouth of the patient to support further implant procedures.

31. The method of claim 30, wherein the tooth-shaped contour comprises a radio-opaque material.

32. The method of claim 31, wherein supporting of further implant procedures comprises imaging the mouth of the patient with an imaging procedure taken from the group consisting of x-ray, CAT scan, panorex, and MRI recording.

33. The method of claim 30, wherein the tooth-shaped contour comprises a non-radio opaque material.

34. The method of claim 30, wherein supporting of further implant procedures comprises:

creating a hole in the matrix over the central bore of the tooth-shaped contour;

inserting a surgical drill bur through the hole in the matrix and the central bore of the tooth-shaped contour; and

creating an osteotomy site in the mouth of the patient using the surgical drill bur while the tooth-shaped contour is stabilized in its proper position in the matrix.

35. The method for dental implant surgery using a prefabricated dental implant surgical guide of claim 30, wherein the shape of the tooth-shaped contour is selected

from the group consisting of a central incisor shape, a lateral incisor shape, a cuspid shape, a premolar shape, and a molar shape of both upper and lower jaws.

36. A method for creating a dental implant surgical guide comprising:

creating an impression of an edentulous area and existing teeth of a patient;

creating a model of the impression;

selecting from an implant surgical guide tooth-shaped contour selector kit comprising tooth-shaped contours, the tooth-shaped contours corresponding to the edentulous area, each tooth-shaped contour having a central bore therethrough;

securing a selected tooth-shaped contour to the model;

forming a matrix of the model with the tooth-shaped contour in place on the model;

removing the matrix from the model while retaining the selected tooth-shaped contour therein;

creating a surgical drill hole in the matrix aligned with the central bore of the selected tooth-shaped contour to create the implant surgical guide.

37. The method for creating a dental implant surgical guide of claim36, wherein the tooth-shaped contours of the selector kit comprise a radio-opaque material.

38. The method for creating a dental implant surgical guide of claim 36, wherein the tooth-shaped contours of the selector kit comprise a non-radio-opaque material.

39. The method for creating a dental implant surgical guide of claim 36, wherein the shape of the tooth-shaped contour is selected from the group consisting of a central incisor shape, a lateral incisor shape, a cuspid shape, a premolar shape, and a molar shape of both upper and lower jaws.

40. A method for performing dental implant surgery comprising:

creating an impression of an edentulous area and existing teeth of a patient;

the endentulous area corresponding to an implant site;

creating a model of the impression;

selecting from an implant surgical guide tooth-shaped selector kit comprising tooth-shaped contours, the tooth-shaped contours corresponding to the edentulous area, each tooth-shaped contour having a central bore therethrough;

securing the selected tooth-shaped contour to the model;

forming a matrix of the model with the tooth-shaped contour in place;

removing the matrix from the model while retaining the selected tooth-shaped contour therein;

creating a surgical drill hole in the matrix aligned with the central bore of the selected tooth-shaped contour to create the implant surgical guide;

placing the implant surgical guide into the mouth of the patient;

creating an osteotomy site for the implant by placing a surgical drill bur through the surgical drill hole of the matrix and through the central bore of the selected tooth-shaped contour; and

creating an osteotomy site using the surgical drill bur while the selected tooth-shaped contour is stabilized in its proper position by the matrix.

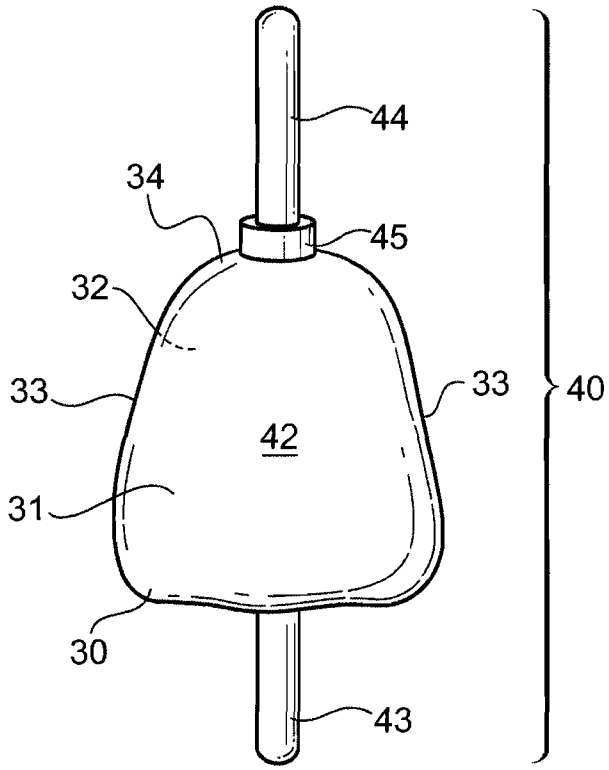
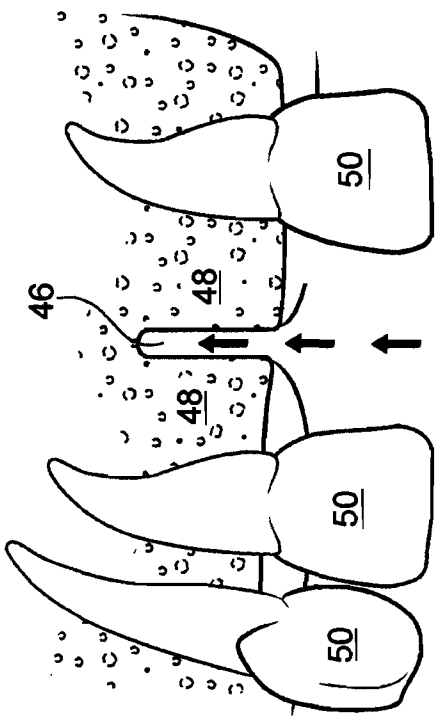


Fig. 1a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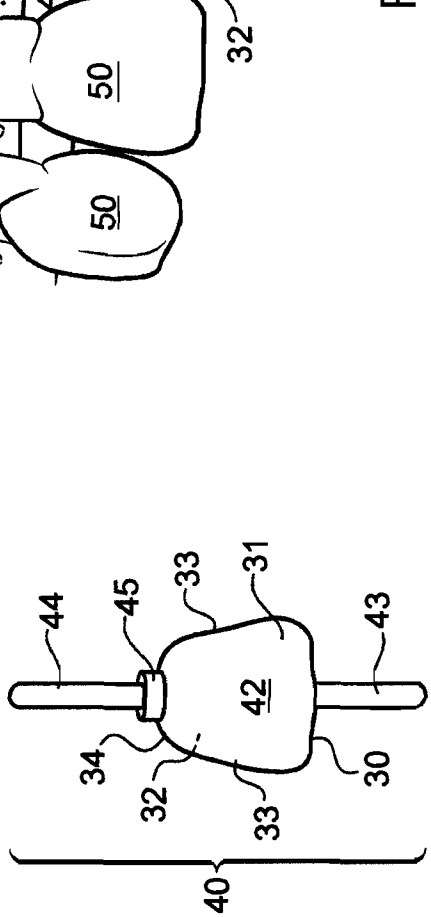
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Fig. 1b

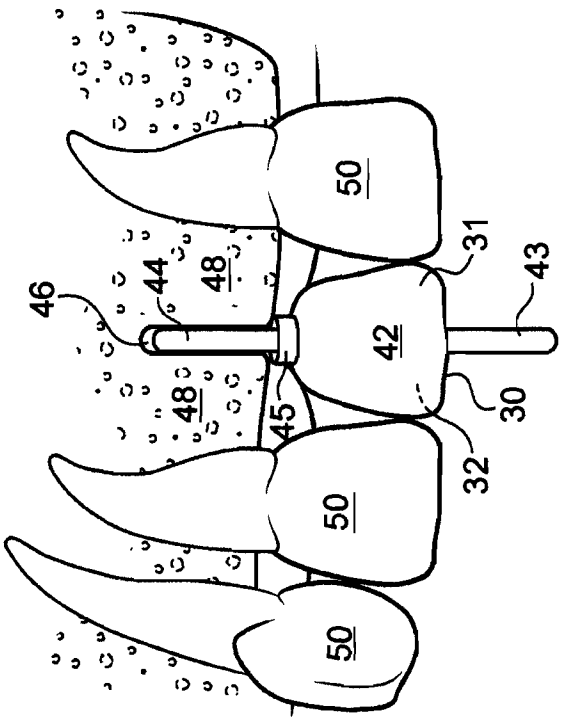
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Fig. 1c

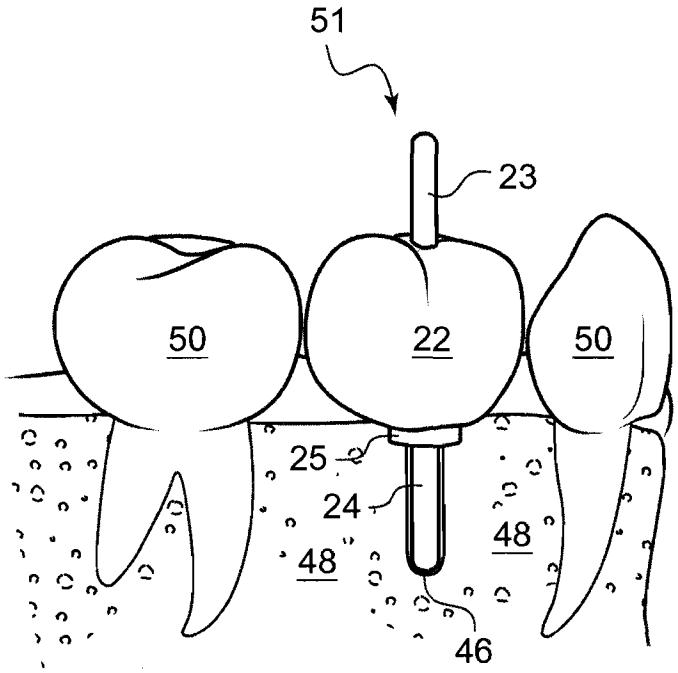


Fig. 2a

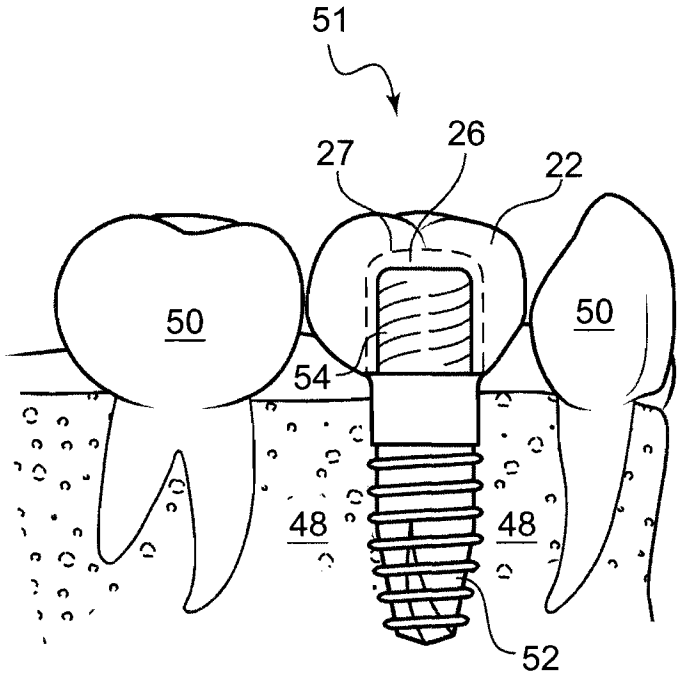
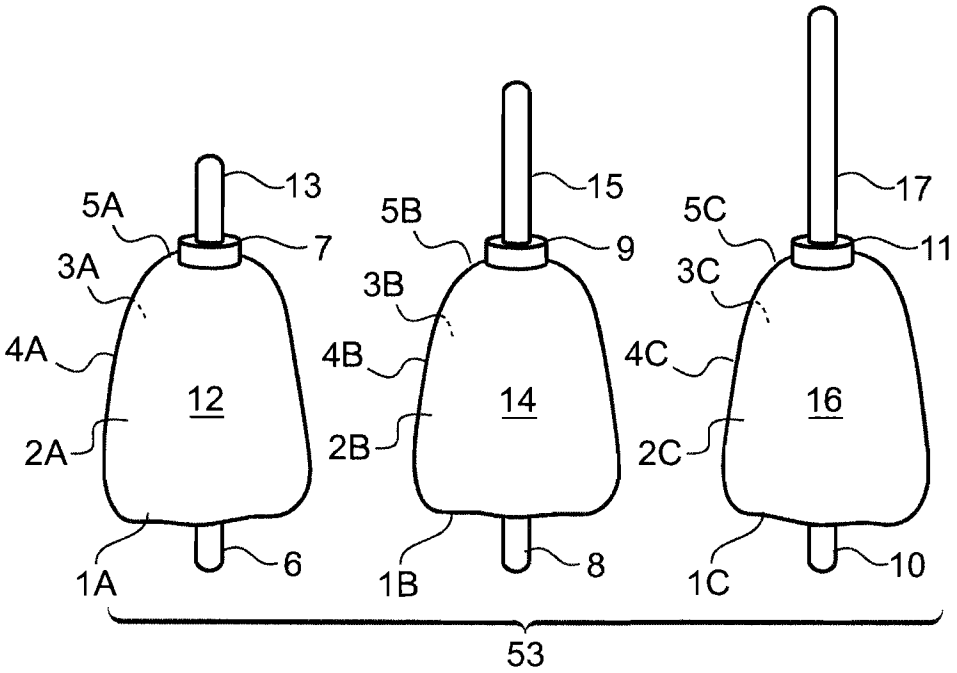


Fig. 2b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4A
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1A
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5B
15
9
3B
4B
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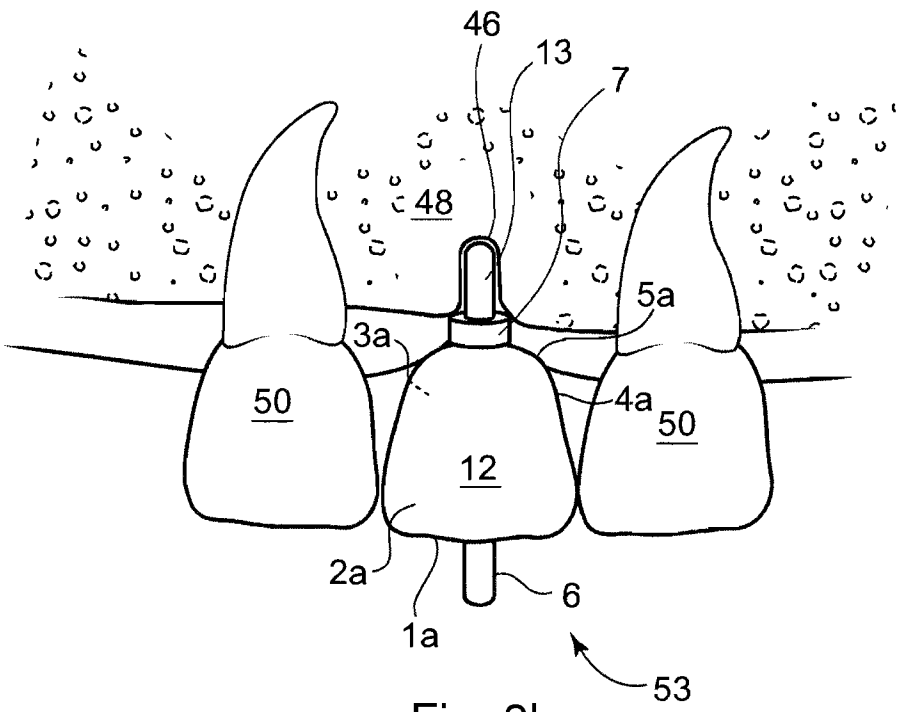
1B
8
5C
17
11
3C
4C
16
2C
1C
10
53

Fig. 3a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2a
1a
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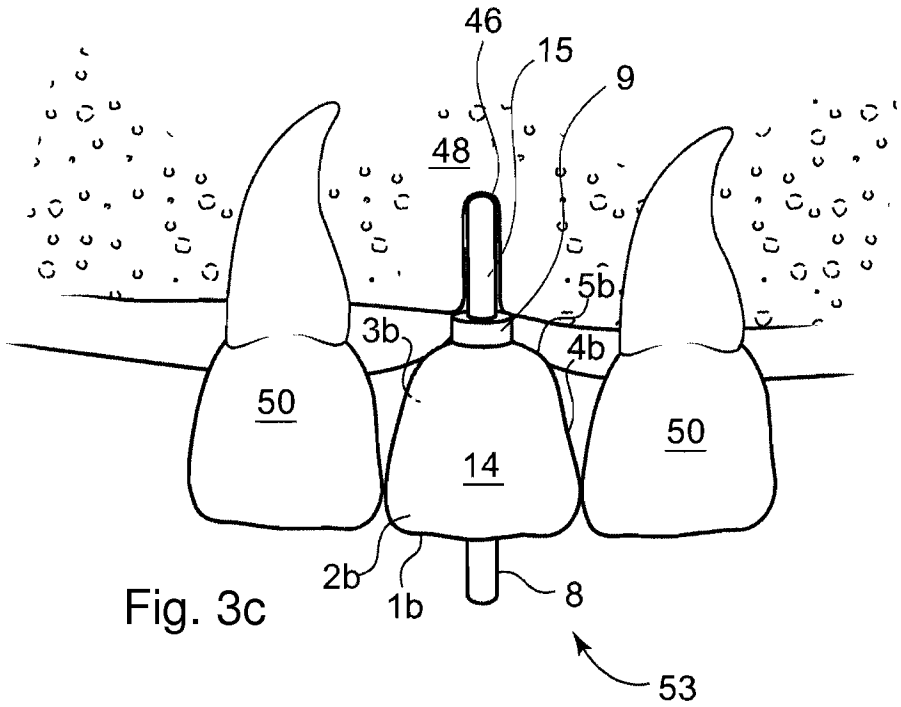
53

Fig. 3b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2b
1b
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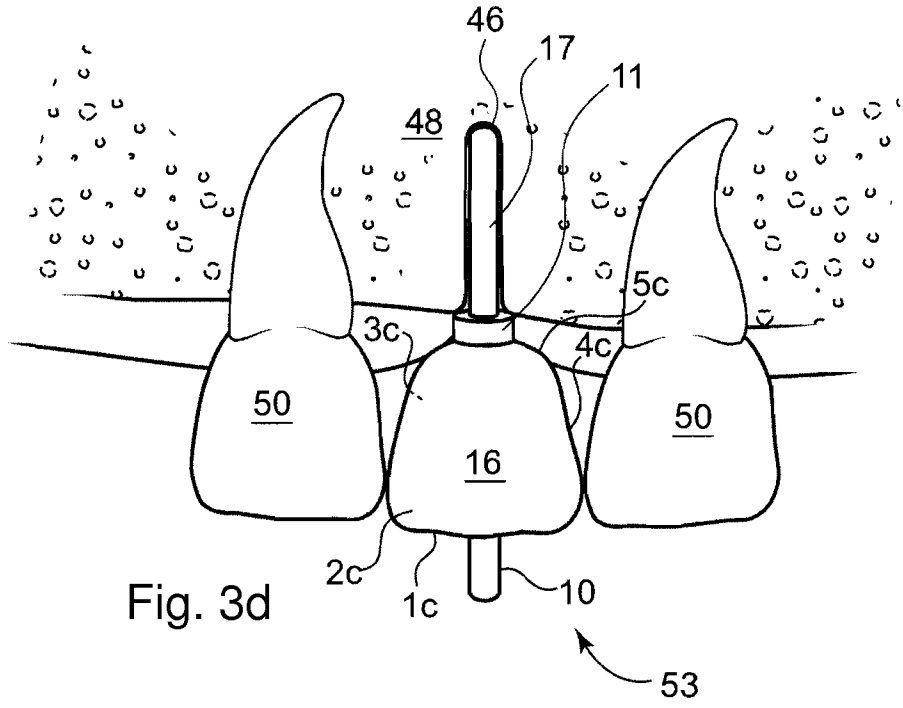
53

Fig. 3c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53

Fig. 3d

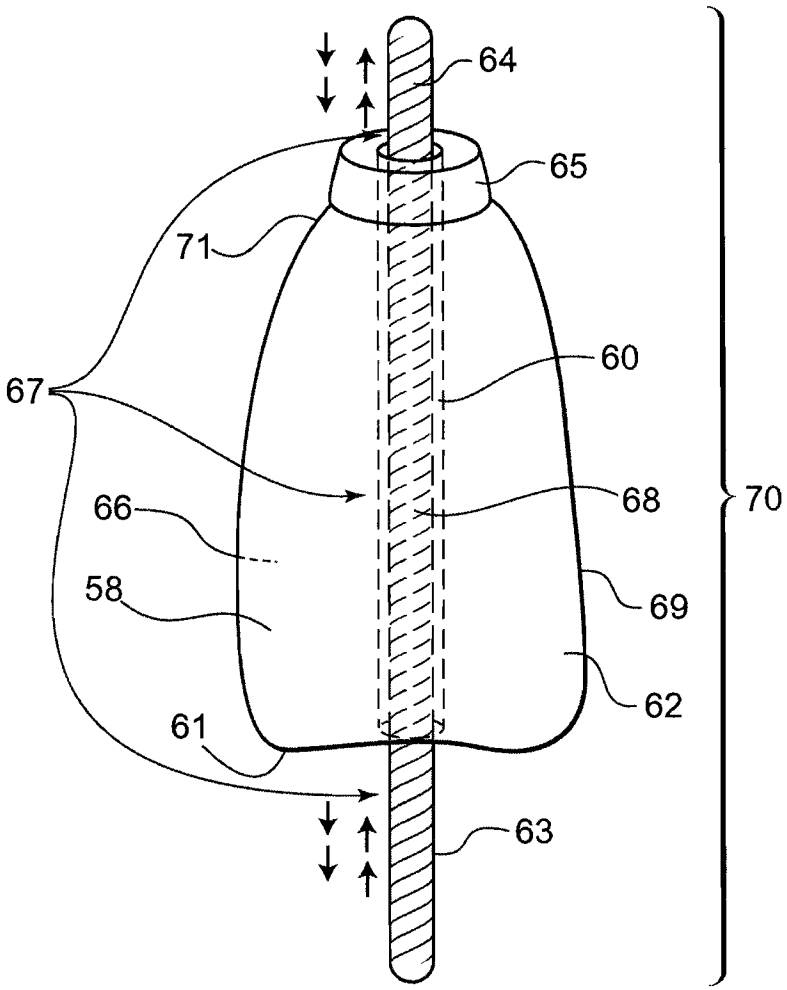

Fig. 4a

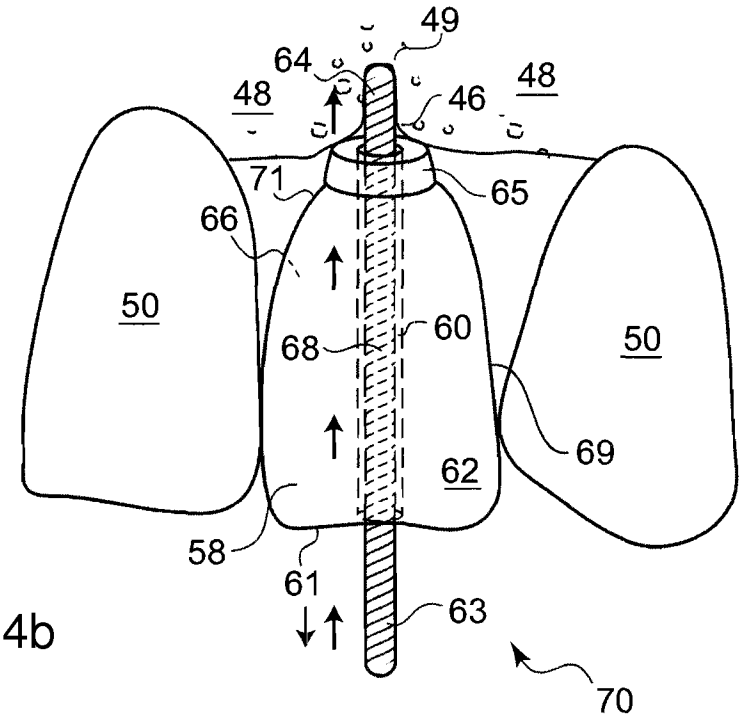
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Fig. 4b

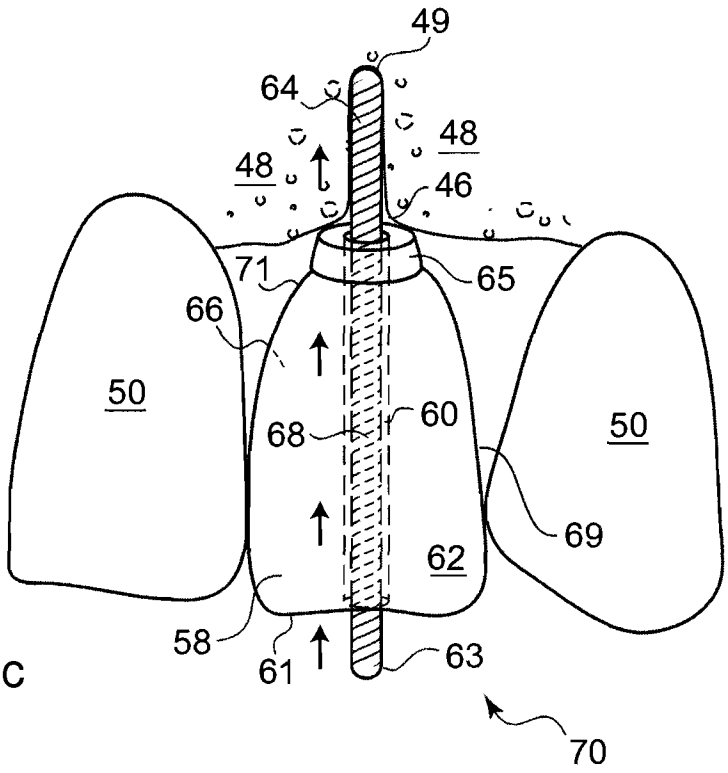
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Fig. 4c

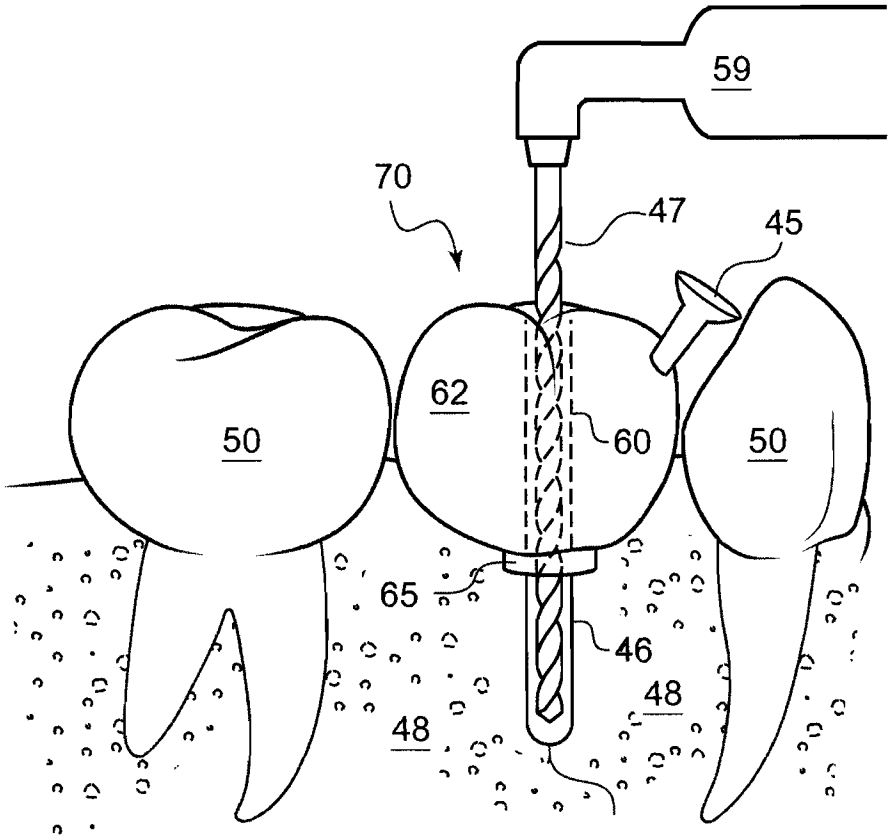
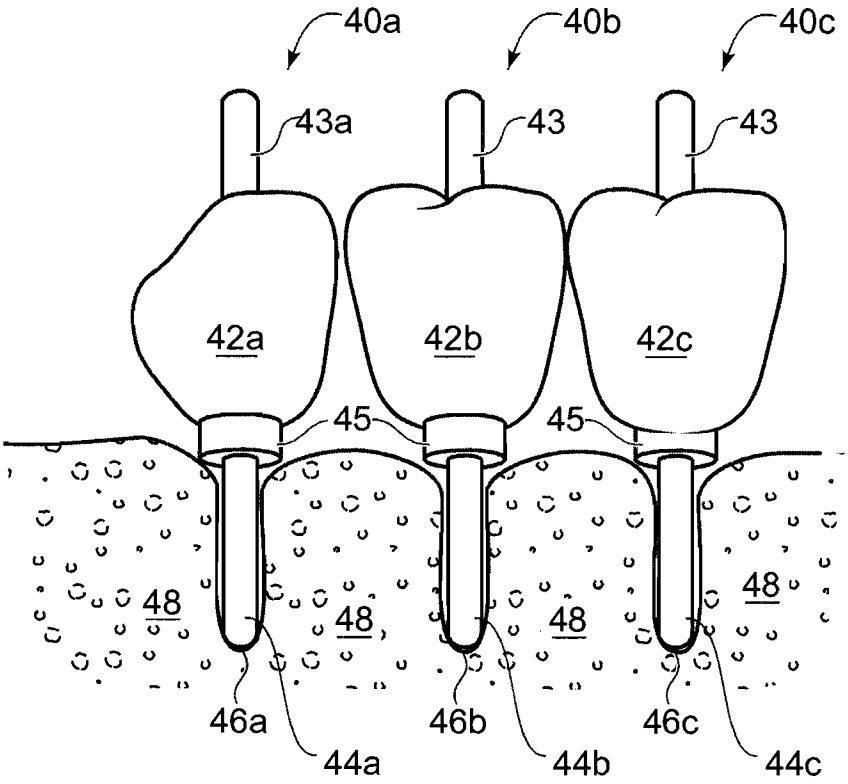


Fig. 4d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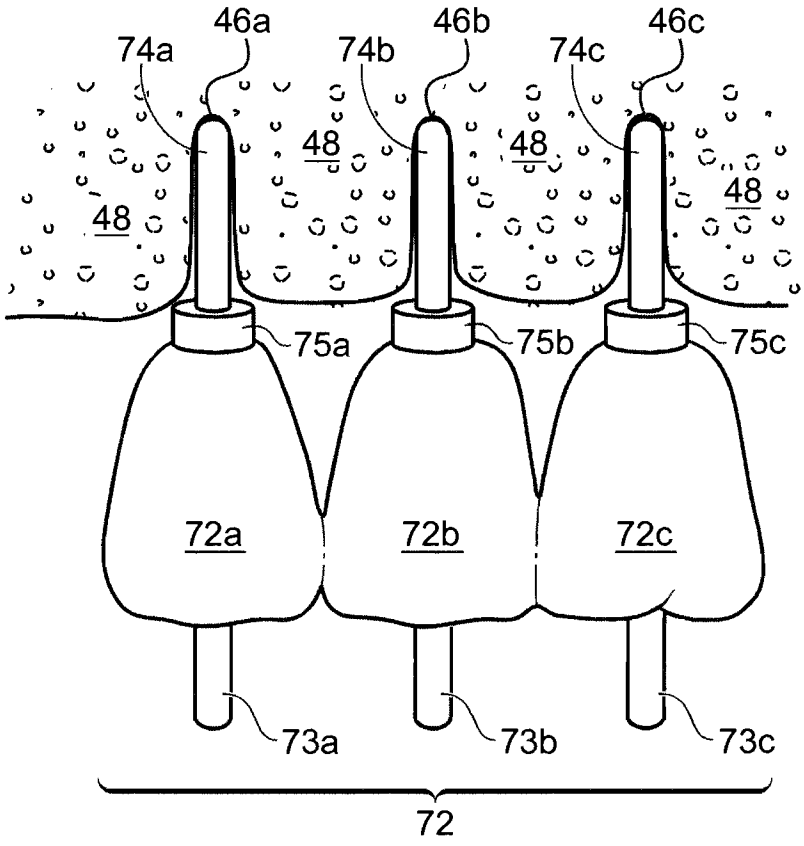
46b
46c
44a
44b
44c

Fig. 5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73b
73c
72

Fig. 6

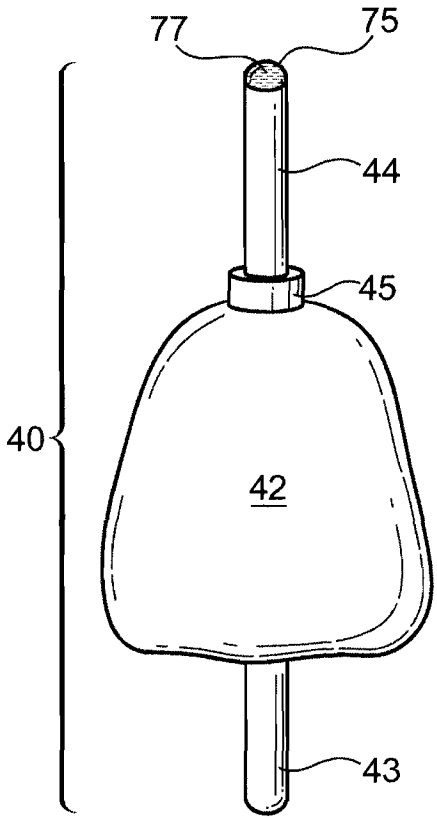


Fig. 7a

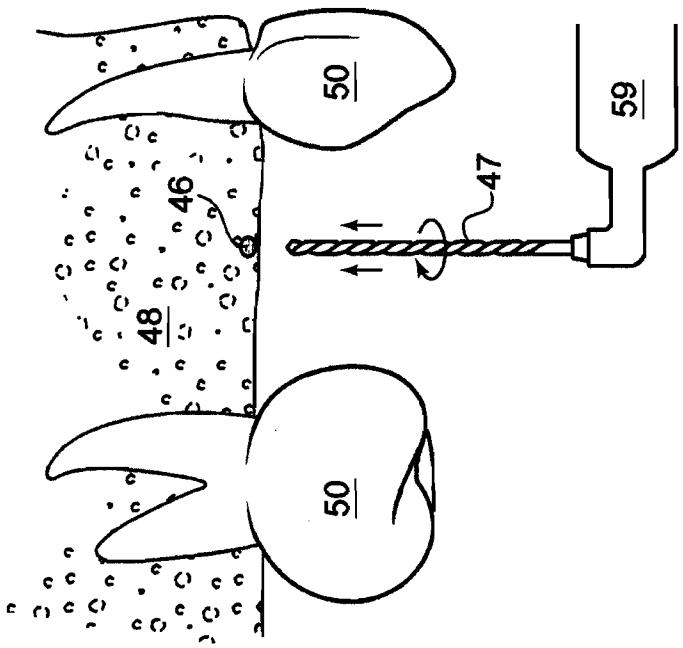


Fig. 7c

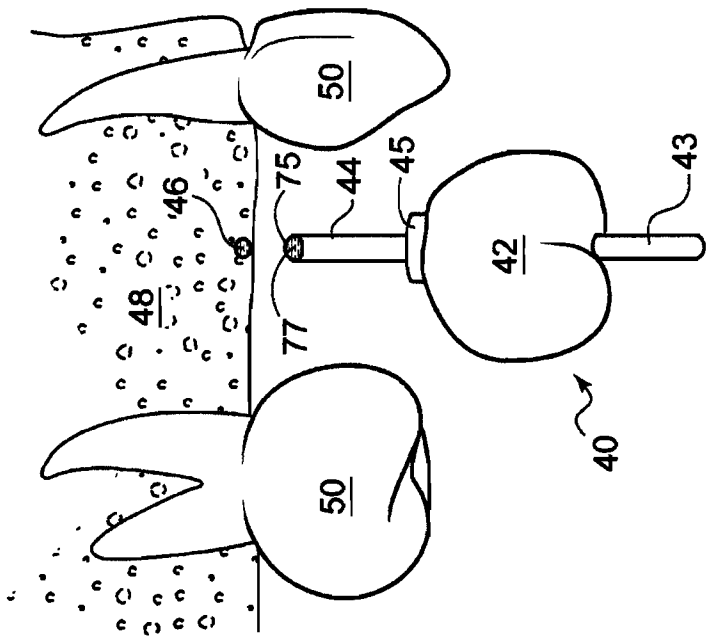


Fig. 7b

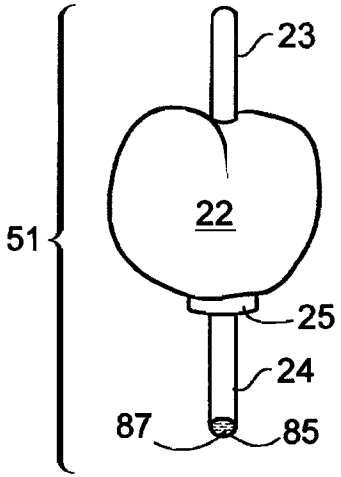


Fig. 8a

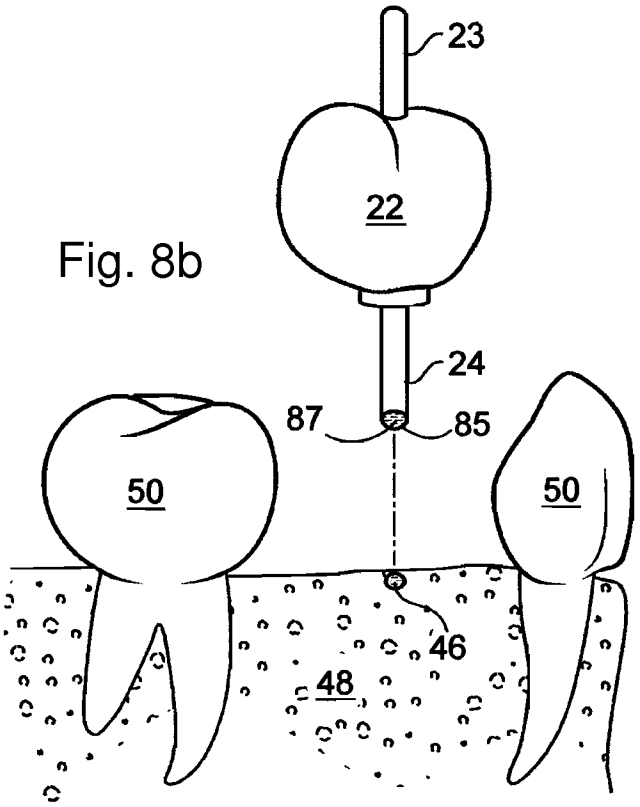


Fig. 8b

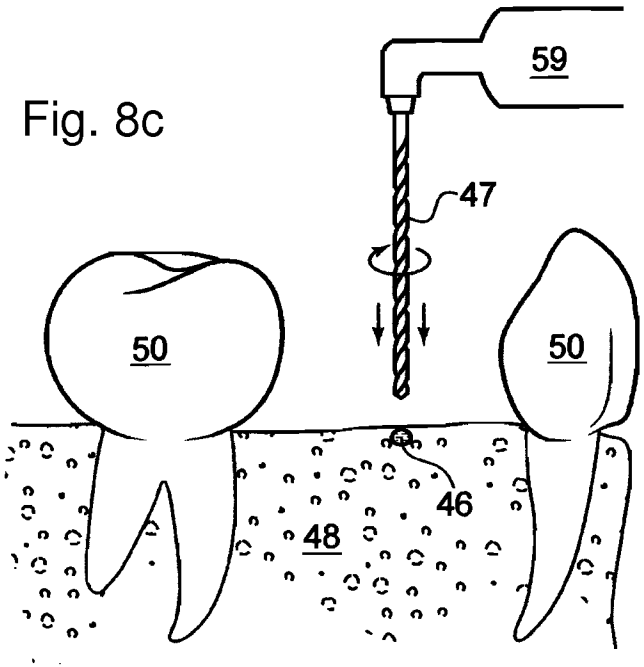


Fig. 8c

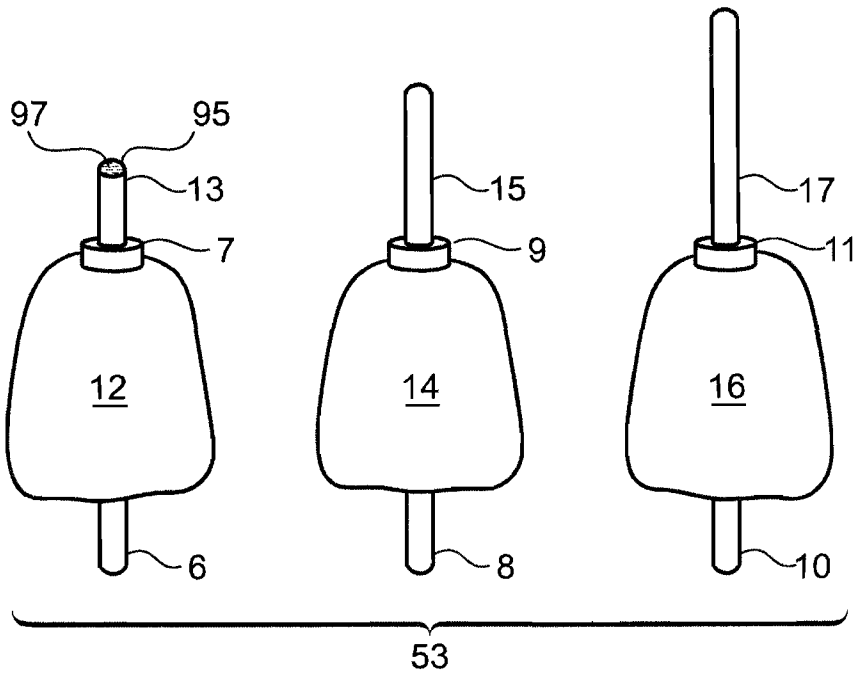


Fig. 9a

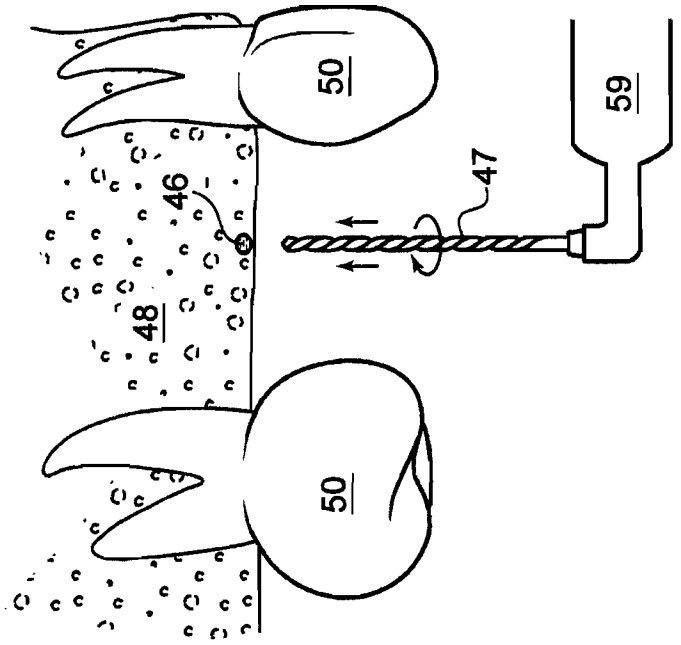


Fig. 9c

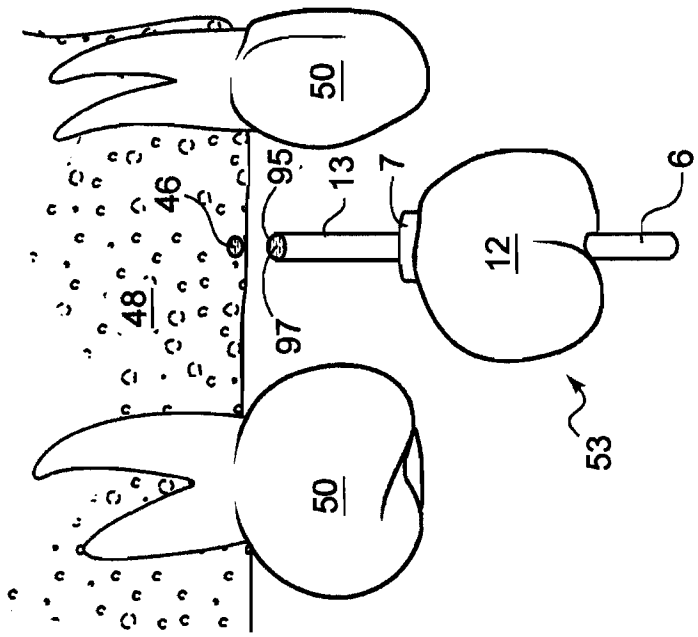


Fig. 9b

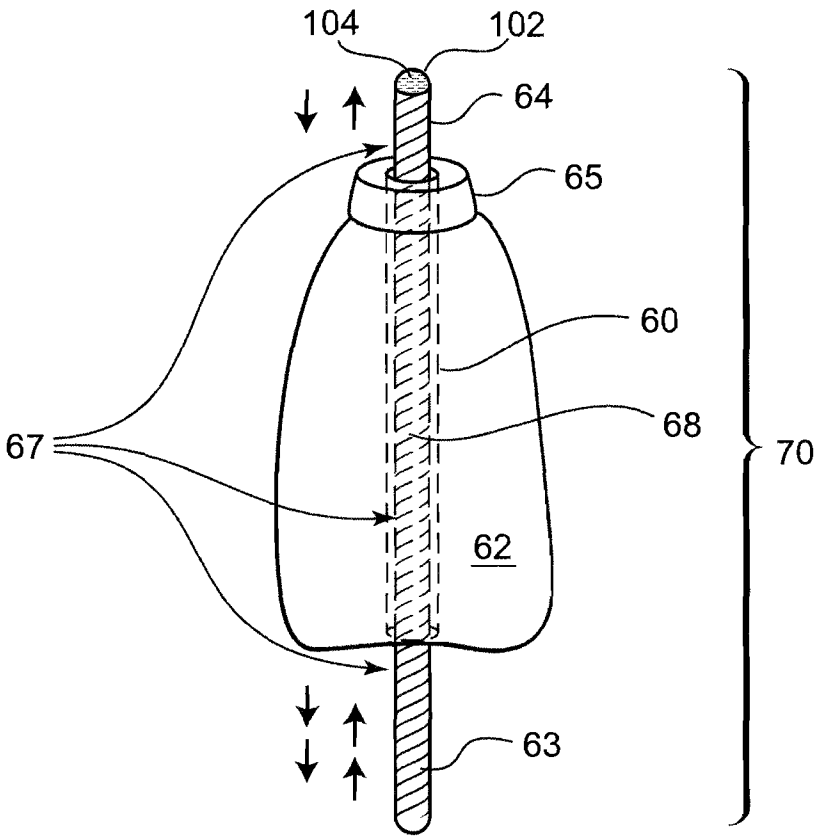


Fig. 10a

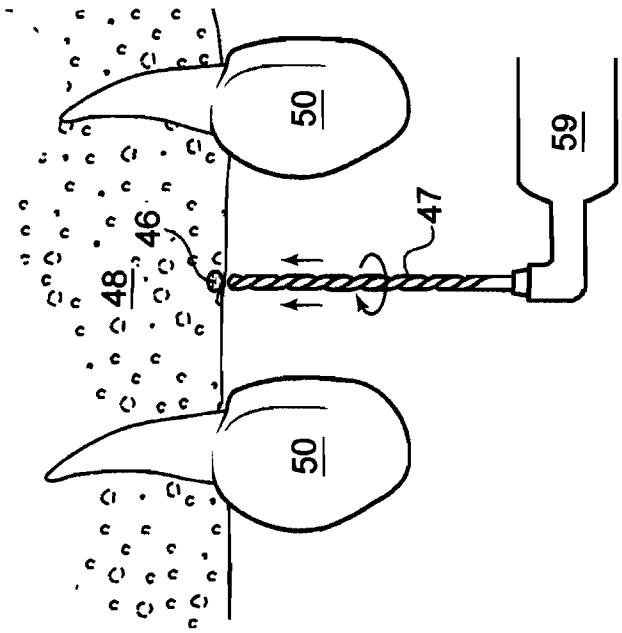


Fig. 10c

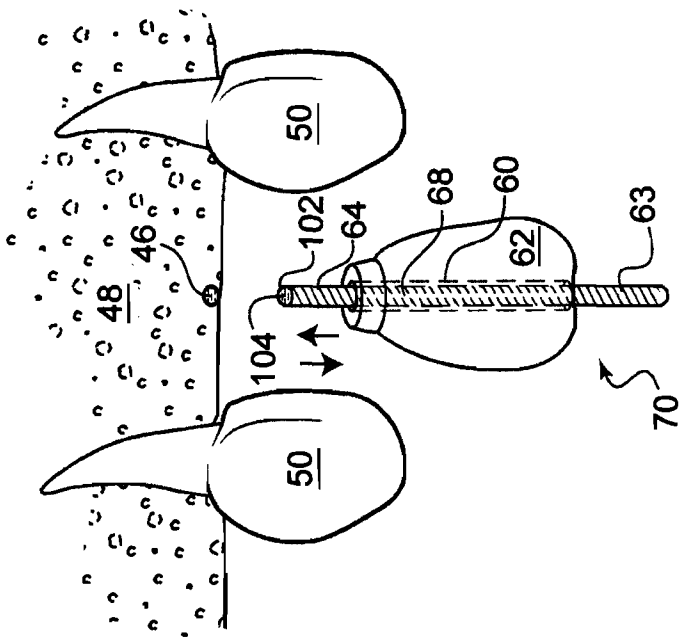
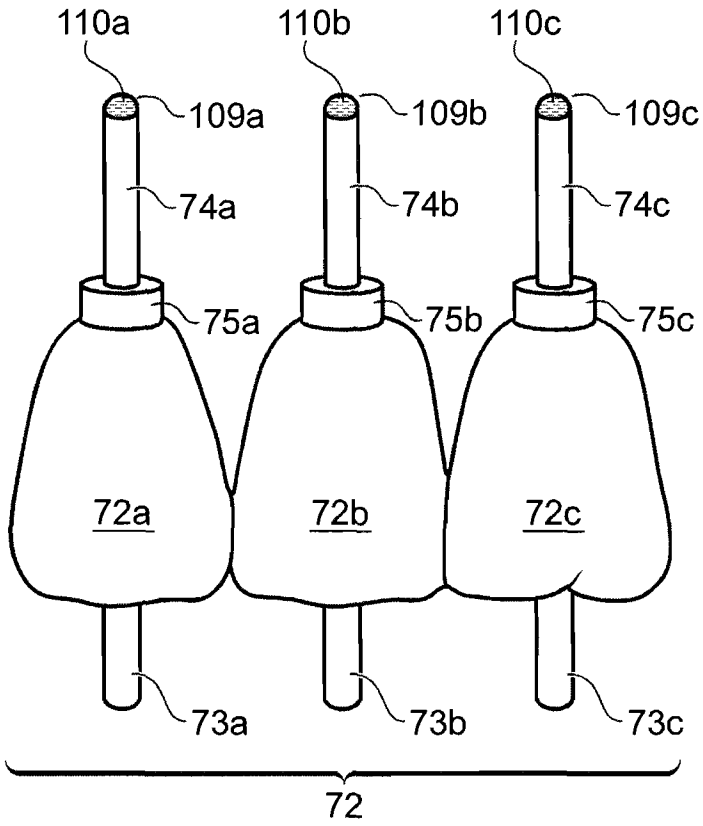


Fig. 10b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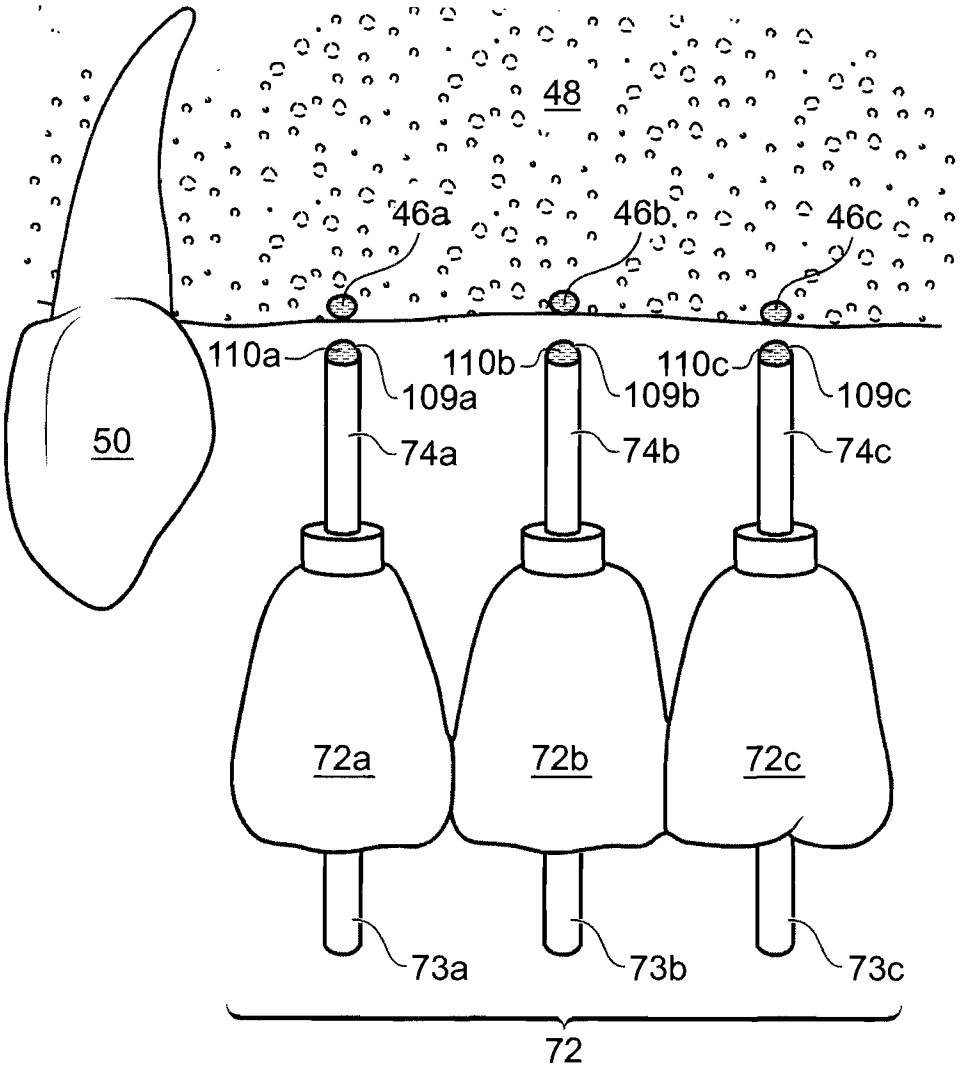
73c
72

Fig. 11a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73c
72

Fig. 11b

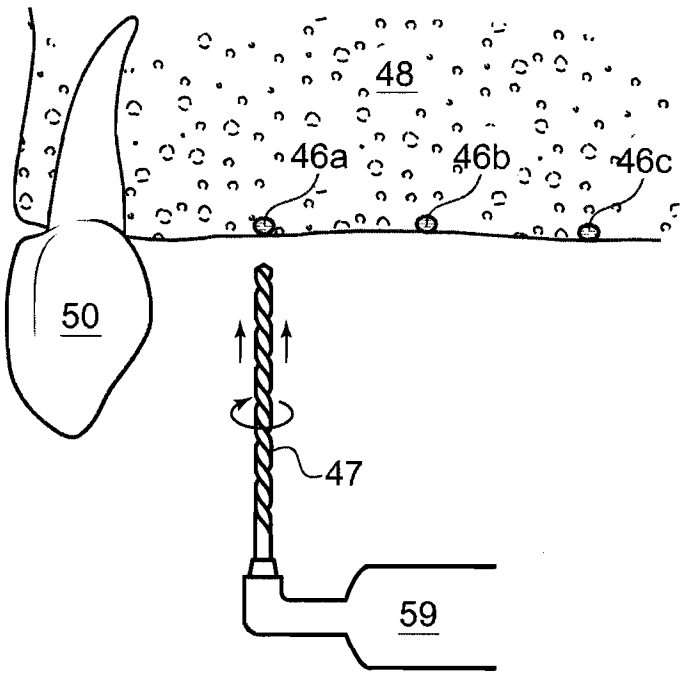

Fig. 11c

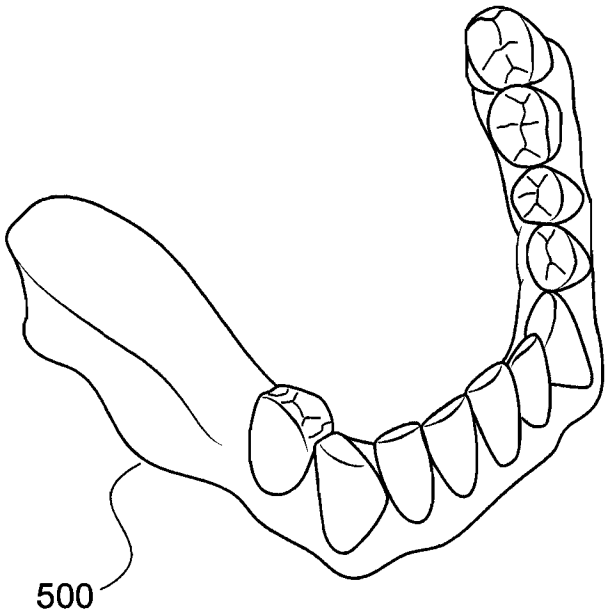

Fig. 12a

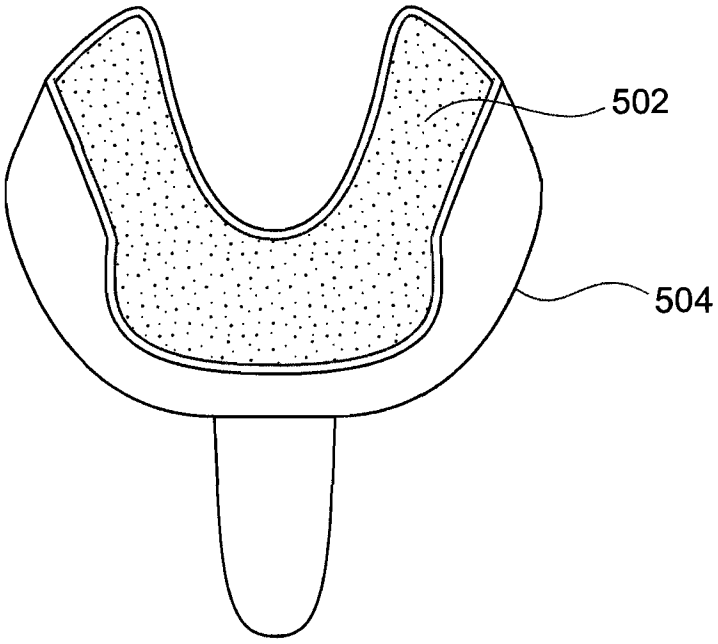

Fig. 12b

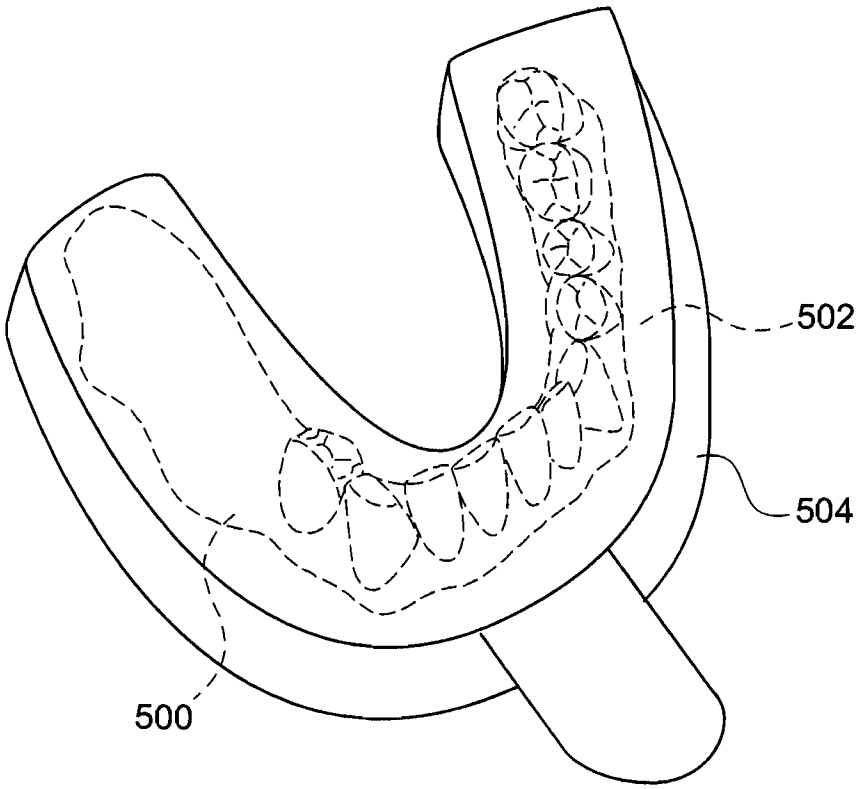

Fig. 12c

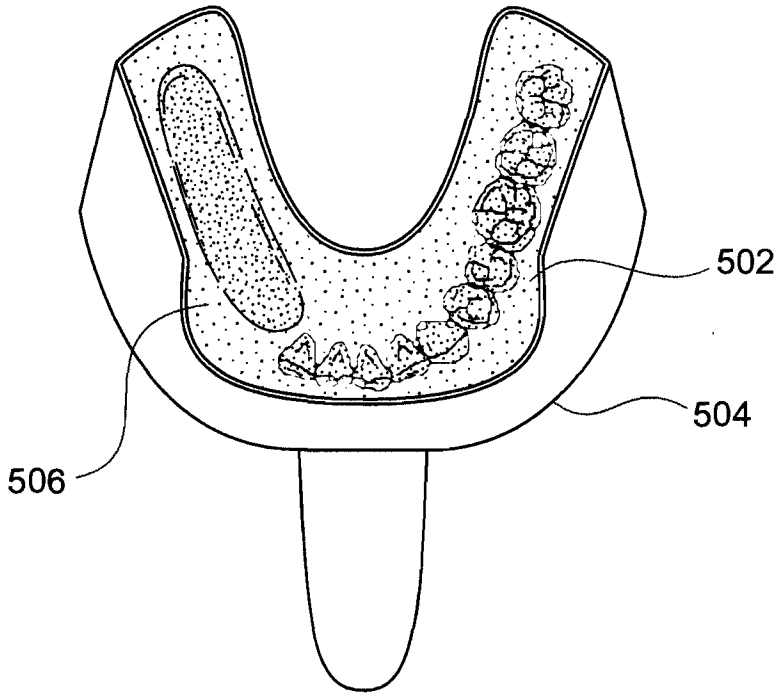

Fig. 12d

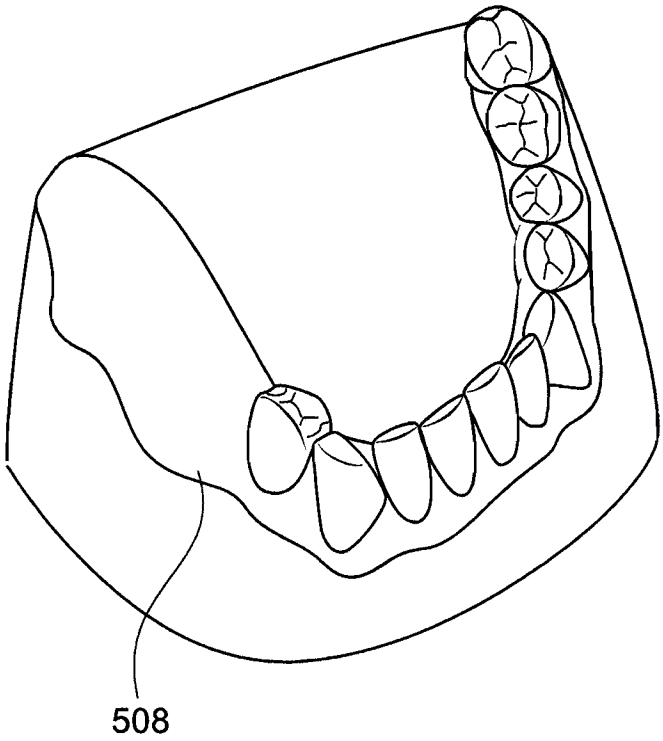

Fig. 12e

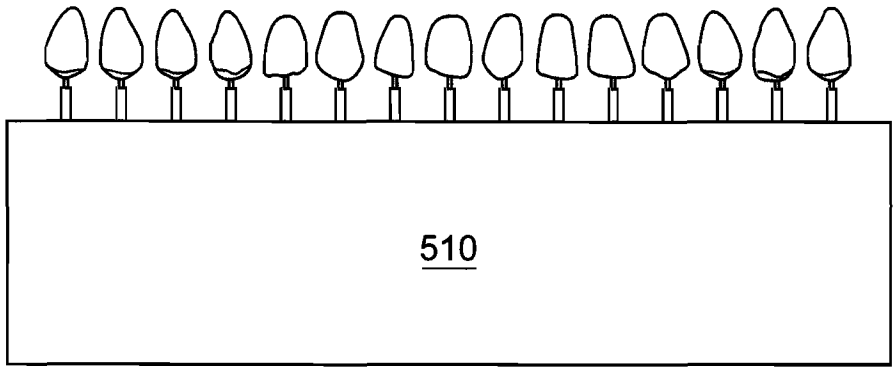

Fig. 13

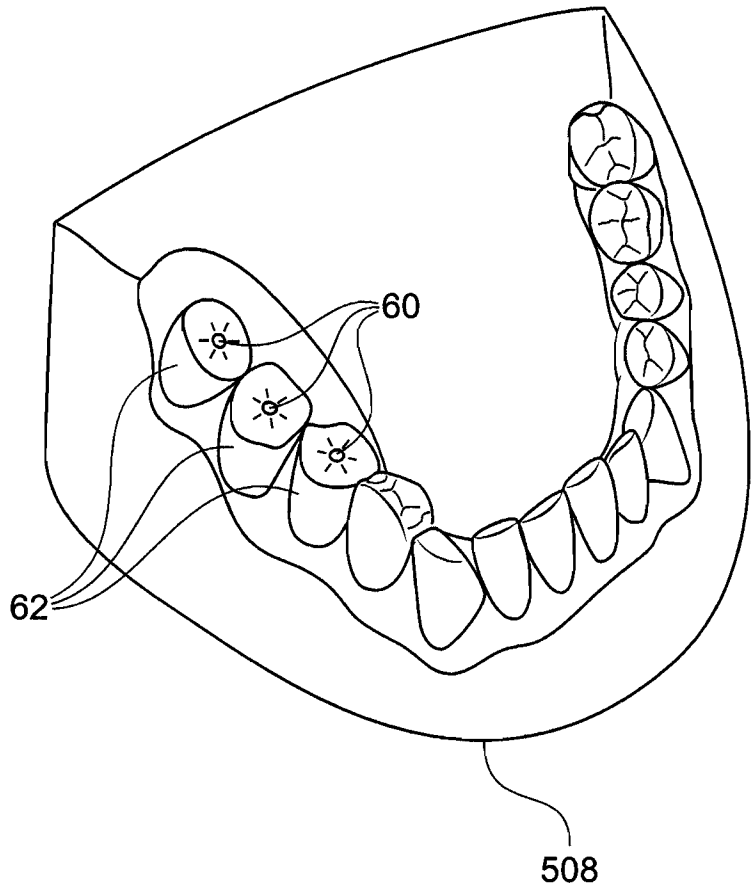

Fig. 14

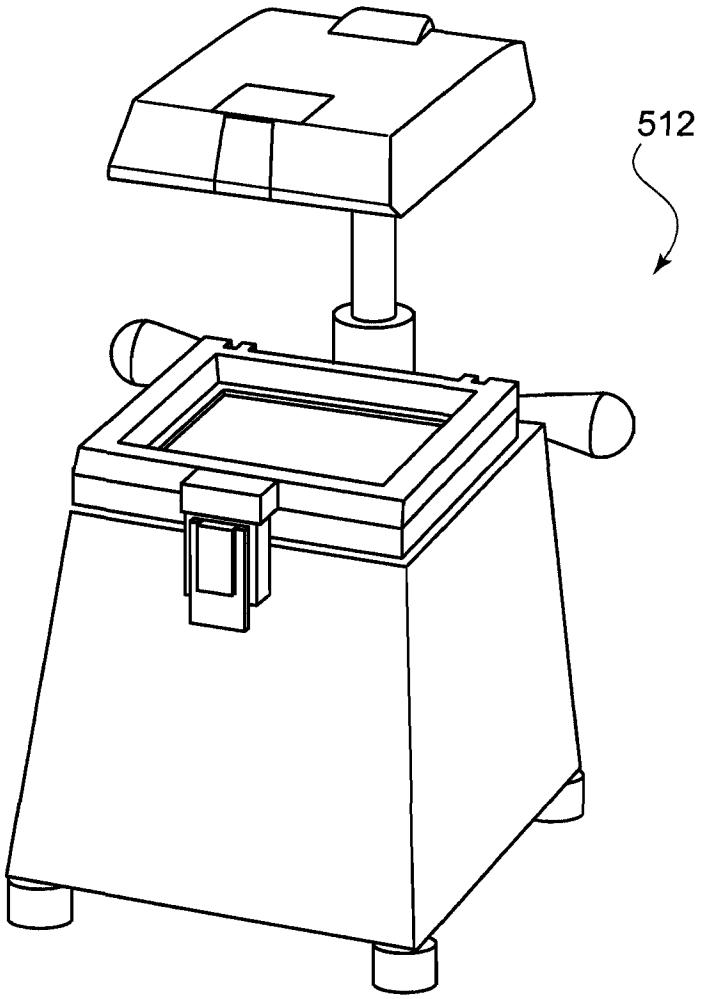

Fig. 15a

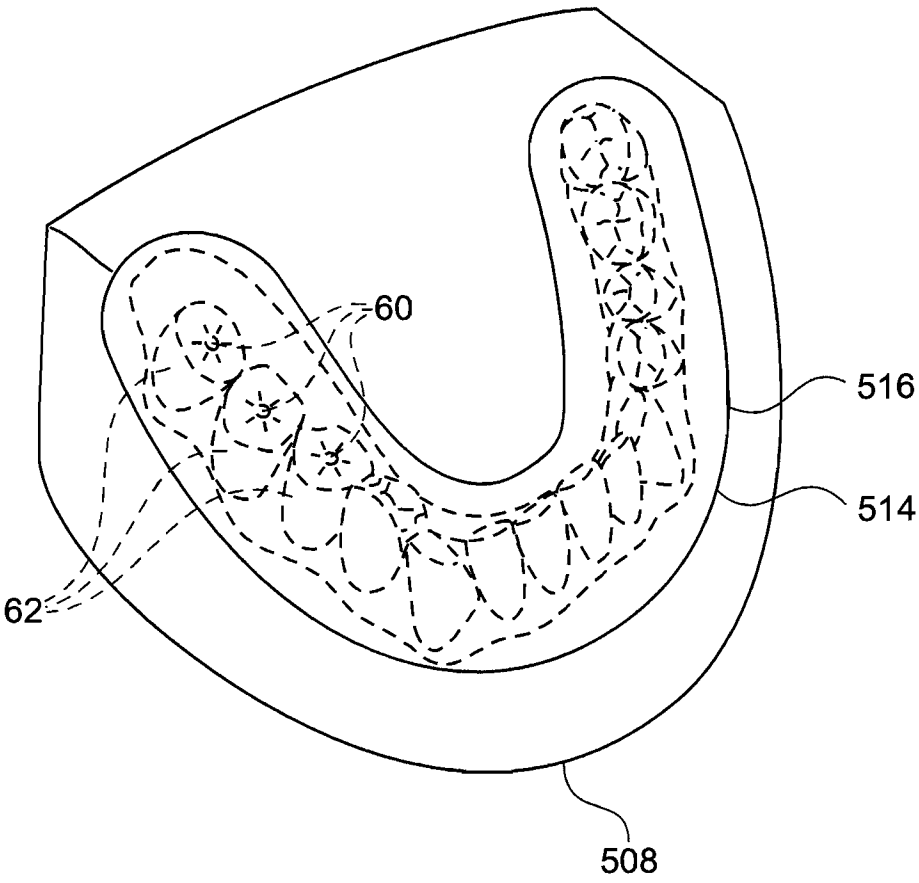

Fig. 15b

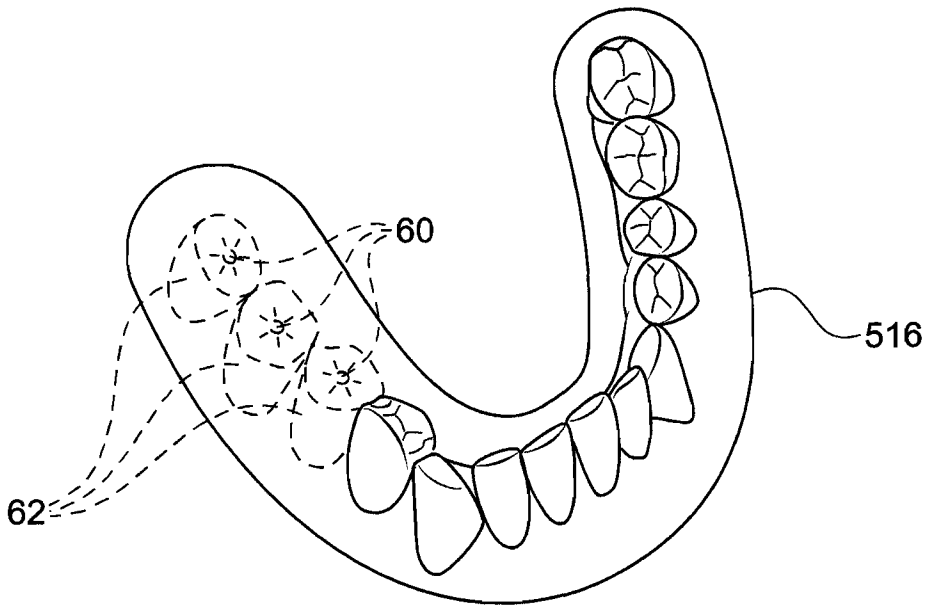

Fig. 15c

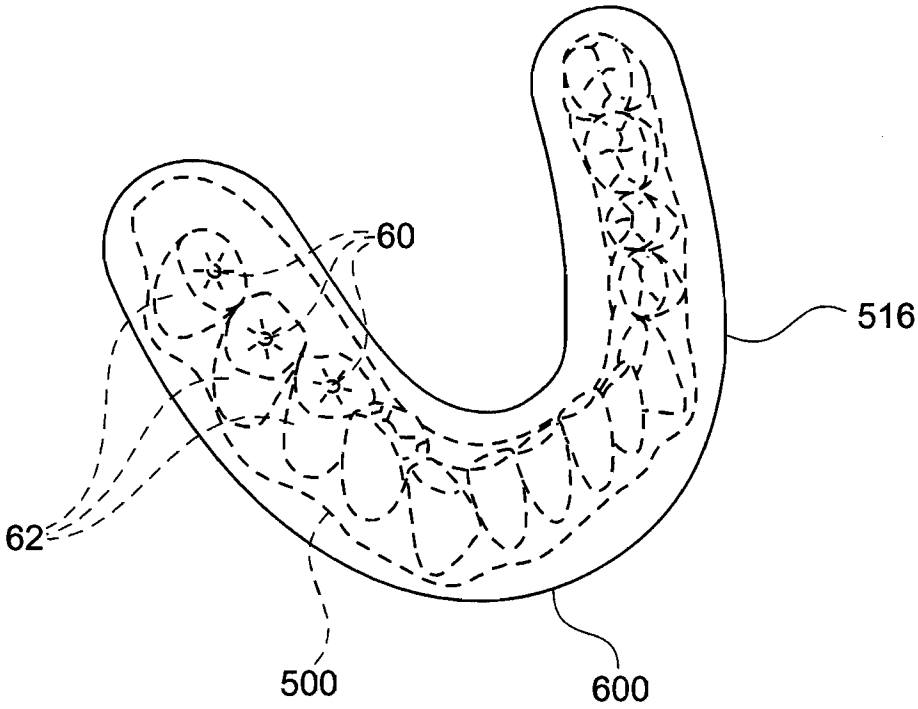

Fig. 15d

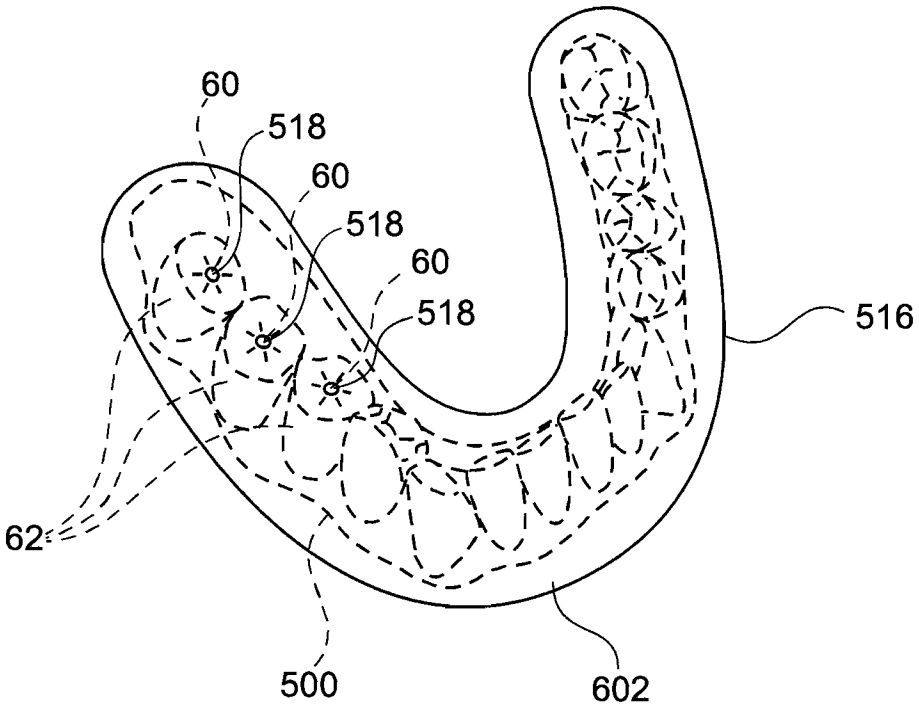

Fig. 16a

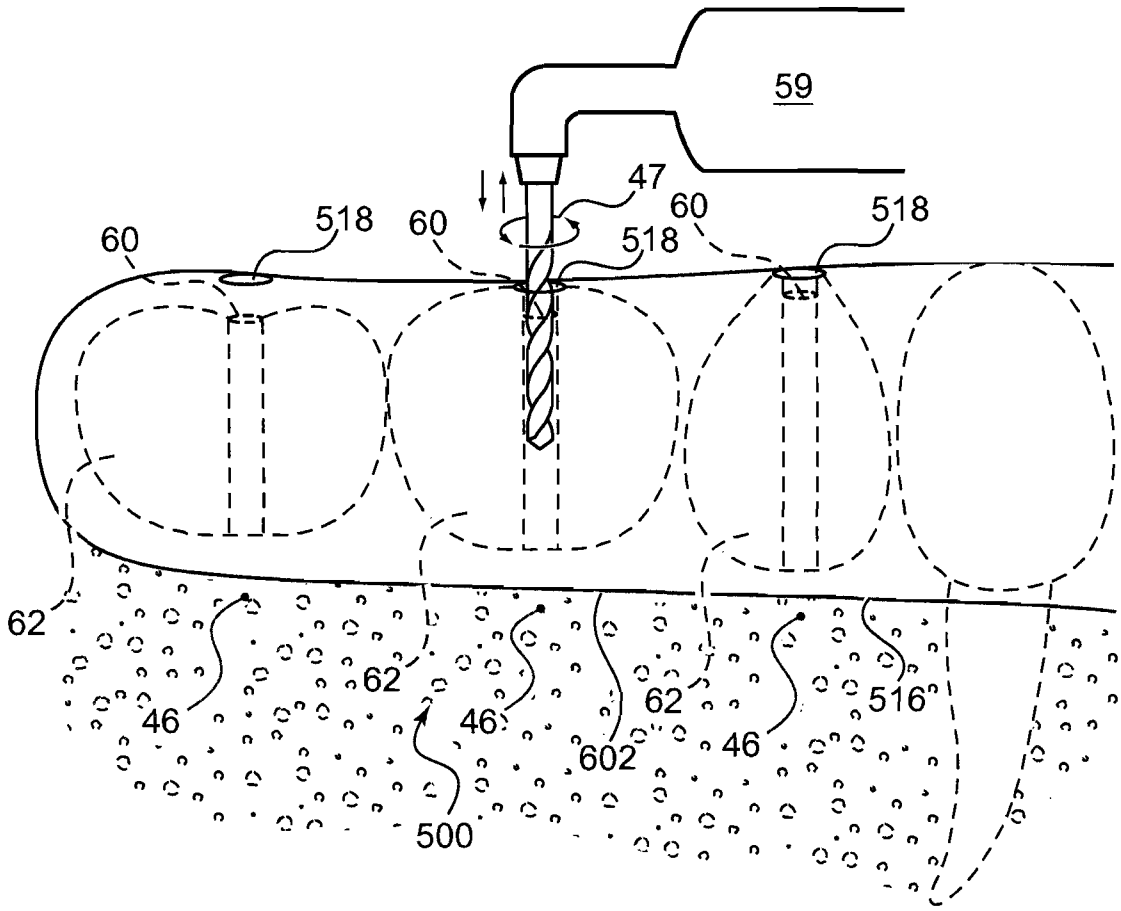

Fig. 16b