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Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

[Continued on next page]

(54) **Title**: PRESS-FIT PROSTHESIS

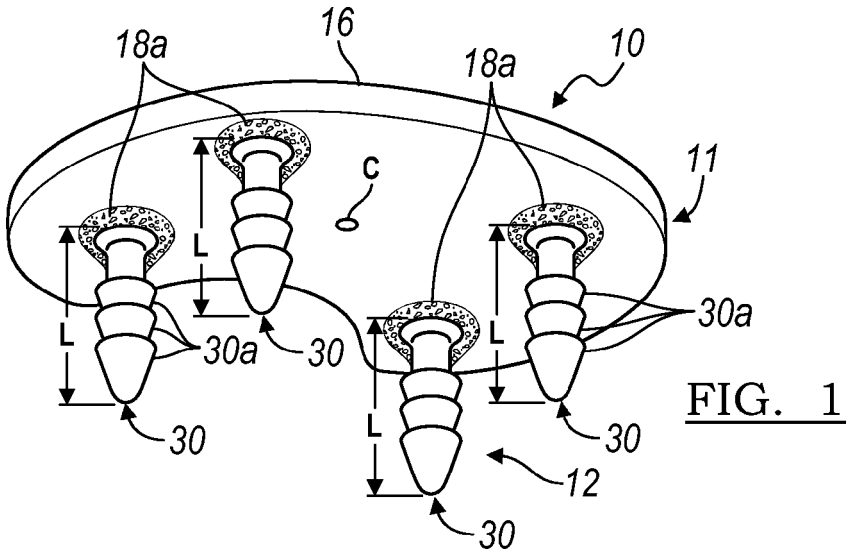

FIG. 1

(57) **Abstract**: A press-fit prosthesis for replacing a portion of a bone. The prosthesis can comprise a first side (16) and a second side (18) opposite the first side. The first side. the second side can be operable to engage the bone. The prosthesis can include at least one resorbable fixation member (30) coupled to the second side such that first side. The at least one resorbable fixation member can be coupled offset from a center of the second side. The at least one resorbable fixation member can substantially resist movement of the prosthesis relative to the bone. The at least one resorbable fixation member can resorb at a rate that enables bone in-growth to fixedly couople the prothesis to the bone

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— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

— *with international search report (Art. 21(3))*

PRESS-FIT PROSTHESIS

FIELD

[0001] The present disclosure relates generally to implants, and more specifically, to a method and apparatus for providing resorbable fixation of press-fit implants.

BACKGROUND

[0002] The statements in this section merely provide background information related to the present disclosure and may not constitute prior art.

[0003] Many portions of the human anatomy naturally articulate relative to one another. Generally, the articulation between the portions of the anatomy is substantially smooth and without abrasion. This articulation is allowed by the presence of natural tissues, such as cartilage and strong bone.

[0004] Over time, however, due to injury, stress, degenerative health issues and various other issues, articulation of the various portions of the anatomy can become rough or impractical. For example, injury can cause the cartilage or the boney structure to become weak, damaged, or non-existent. Therefore, the articulation of the anatomical portions is no longer possible for the individual.

[0005] At such times, it can be desirable to replace the anatomical portions with a prosthetic portion such that normal or easy articulation can be reproduced. For example, a distal end of a femur naturally articulates with respect to a tibia to form a knee joint. After injury or other degenerative processes, the distal end of the femur and the tibia and can become rough or damaged. In these cases, it may be desirable to replace at least a portion of the tibia and/or femur with a prosthesis.

[0006] For example, a tibial tray can replace a portion of the tibia, and a polymer bearing can be positioned on the tibial tray to enable a femoral component to articulate relative to the bearing. Generally, tibial trays can include one or more bores that extend through the tibial tray for receipt of a mechanical

fastener to couple the tibial tray to the tibia. The use of bores through the tibial tray, however, may allow wear debris to pass through the tibial tray.

SUMMARY

[0007] A press-fit prosthesis for replacing a portion of a bone. The prosthesis can comprise a first side and a second side opposite the first side. The second side can be operable to engage the bone. The prosthesis can include at least one resorbable fixation member coupled to the second side such that the at least one resorbable fixation member does not extend through to the first side. The at least one resorbable fixation member can be coupled offset from a center of the second side. The at least one resorbable fixation member can substantially resist movement of the prosthesis relative to the bone. The at least one resorbable fixation member can resorb at a rate that enables bone in-growth to fixedly couple the prothesis to the bone.

[0008] Further provided is a press-fit prosthesis for replacing a portion of a bone. The prosthesis can include a tray. The tray can be operable to replace the portion of the bone. The tray can include a first side that forms a barrier and a second side. The second side can be opposite the first side and can facilitate bone in-growth. The prosthesis can also include at least one resorbable fixation member coupled to the second side. The at least one resorbable fixation member can be adapted to be press-fit into a prepared portion of the bone to couple the tray to the bone. The at least one resorbable fixation member can include at least one formed geometric feature that can be operable to substantially resist movement of the tray relative to the bone. The at least one resorbable fixation member can resorb at a rate that enables bone in-growth to fixedly couple the second side of the tray to the bone.

[0009] Also provided is a press-fit prosthesis for replacing a portion of a bone. The prosthesis can include a tibial tray operable to replace a portion of a tibia. The tibial tray can have a bearing engaging surface that forms a barrier and a bone engaging surface. The prosthesis can include a bearing positioned on the bearing engaging surface of the tibial tray. The prosthesis can include a femoral component operable to replace a portion of a femur and articulate

relative to the bearing. The prosthesis can also include a plurality of resorbable fixation members. The plurality of resorbable fixation members can be coupled to the bone engaging surface offset from a center of the bone engaging surface such that none of the plurality of resorbable fixation members are coupled to the center of the bone engaging surface and none of the plurality of resorbable fixation members extend through to the bearing engaging surface. The plurality of resorbable fixation members can be operable to be press-fit into the tibia to couple the tibial tray to the tibia. The plurality of resorbable fixation members can include at least one formed geometric feature that is operable to substantially resist movement of the tibial tray relative to the tibia. The plurality of resorbable fixation members can be composed of a bio-resorbable material selected from the group comprising: a resorbable polymer, a resorbable coral structure or combinations thereof. The bone engaging surface can comprise a porous metal or metal alloy structure. The plurality of resorbable fixation members can be operable to resorb at a rate that enables bone in-growth to fixedly couple the tibial tray to the tibia.

[0010] Further areas of applicability will become apparent from the description provided herein. It should be understood that the description and specific examples are intended for purposes of illustration only and are not intended to limit the scope of the present disclosure.

DRAWINGS

[0011] The drawings described herein are for illustration purposes only and are not intended to limit the scope of the present disclosure in any way.

[0012] Fig. 1 is a perspective view of a system for resorbable fixation of a press-fit implant according to the present disclosure;

[0013] Fig. 2A is a perspective view of a system for resorbable fixation of a press-fit implant according to the present disclosure;

[0014] Fig. 2B is a perspective view of a system for resorbable fixation of a press-fit implant according to the present disclosure; and

[0015] Fig. 3 is a schematic environmental view of the system of Fig. 1 in an anatomy.

DETAILED DESCRIPTION

[0016] The following description is merely exemplary in nature and is not intended to limit the present disclosure, application, or uses. It should be understood that throughout the drawings, corresponding reference numerals indicate like or corresponding parts and features. Although the following description is related generally to a prosthesis that can be positioned in a prepared portion of the anatomy, such as in a tibia, it will be understood that the prosthesis, as described and claimed herein, can be used with any appropriate surgical procedure. Therefore, it will be understood that the following discussions are not intended to limit the scope of the appended claims.

[0017] With reference to Fig. 1, a press-fit tibial implant 10 is shown. The tibial implant 10 can include a tibial tray 11 and a resorbable fixation system 12 that can couple the tibial implant 10 to a tibia 14 (Fig. 3). A polymeric bearing 15 can be positioned atop the tibial tray 11. The bearing 15 can articulate with a femoral component 17 attached to a femur 19. The tibial tray 11 can include a bearing engaging surface 16 that engages the bearing 15, and a bone engaging surface 18 that engages the tibia 14. The bearing engaging surface 16 can engage the bearing 15 such that the bearing 15 can be fixedly coupled, floating or rotatable relative to the bearing engaging surface 16 of the tibial tray 11. The tibial tray 11 and bearing 15 can facilitate or enable the smooth articulation of the femoral component 17 with respect to the tibia 14 to form a knee joint 21.

[0018] It should be noted that the tibial tray 11 can be used with any suitable knee prosthesis, such as a Vanguard™ complete knee system, a cruciate retaining knee prosthesis, for example, the AGC® Total Knee System™, a posterior stabilized knee prosthesis, for example, the AGC® Tradition High-Post Knee System™, or a hinged knee prosthesis, for example, the Orthopaedic Salvage System™, all provided by Biomet, Inc. of Warsaw, Indiana, and the remainder of the knee prosthesis can be configured as needed for the particular surgical application. It will be understood, however, that although the resorbable fixation system 12 is described herein as being used with the tibial tray 11, the resorbable fixation system 12 could be employed with any suitable implant, such

as an acetabular cup of a hip prosthesis, a glenoid head of a shoulder prosthesis, a femoral component of a knee prosthesis, a femoral component of a hip prosthesis, an elbow prosthesis, a wrist prosthesis, a unicondular prosthesis, etc.

[0019] With continued reference to Fig. 1, the tibial tray 11 can comprise any suitable biocompatible material, such as a biocompatible metal, metal alloy or polymer. For example, suitable materials can comprise cast titanium, titanium alloy, stainless steel, ceramic bone substitutes, etc. The bearing engaging surface 16 can be substantially devoid of apertures or bores through the tibial tray 11, which can prevent wear debris from passing through the tibial tray 11 and into the surrounding bone of the tibia 14. Thus, the tibial tray 11 can serve as a barrier between the bearing 15 and the tibia 14.

[0020] As shown in Fig. 3, the bone engaging surface 18 can be disposed adjacent to a prepared portion of the tibia 14, and can be opposite the bearing engaging surface 16. In one example, as shown in Figs. 1 and 3, the bone engaging surface 18 can comprise a substantially planar surface, which can be formed integrally with the bearing engaging surface 16. In some instances, the bone engaging surface 18 can include a roughened portion 18a to facilitate bone in-growth. The roughened portion 18a can comprise at least one of a porous coating, a porous layer, a collagen foam, a ceramic layer or the like that can enable bone in-growth to form and thereby couple the tibial tray 11 to the tibia 14.

[0021] In another example, as shown in Fig. 2A, the bone engaging surface 18 can comprise a biocompatible porous metal or metal alloy three-dimensional structure 20 that can be coupled to an intermediate surface 22. The porous structure 20 can be coupled to the intermediate surface 22 via any suitable technique, such as sintering, welding, etc. The porous structure 20 can enable additional bone in-growth to form, which can further couple the tibial tray 11 to the tibia 14. In addition, it should be noted that the porous structure 20 can be coated with an antibiotic, bone growth enhancing material, or the like, to promote healing and bone integration. The porous structure 20 can comprise Regenerex™, provided by Biomet, Inc. of Warsaw, Indiana, for example,

however, any suitable biocompatible porous metal or metal alloy structure could be employed. As a further example, additional exemplary porous metal materials and exemplary methods for making porous metal can be found in co-pending applications, U.S. Serial No. (11/357,929, filed Feb. 17, 2006), entitled "Method and Apparatus for Forming Porous Metal Implants," U.S. Serial No. (11/709,549, filed Feb. 22, 2007), entitled "Porous Metal Cup with Cobalt Bearing Surface," and U.S. Serial Nos. (11/111,123 filed, Apr. 21, 2005; 11/294,692, filed Dec. 5, 2005; 11/357,868, filed Feb. 17, 2006, and 11/546,500 filed Oct. 11, 2006), each entitled "Method and Apparatus for use of Porous Implants," all assigned to Biomet Manufacturing Corp. of Warsaw Indiana, and incorporated herein by reference. The resorbable fixation system 12 can be directly coupled to the porous structure 20, or could be coupled to the intermediate surface 22 such that the resorbable fixation system 12 extends through and beyond the porous structure 20, as will be discussed.

[0022] In addition, according to various embodiments, with reference to Fig. 2B, the bone engaging surface 18 can include one or more coupling features 24 to assist in coupling the resorbable fixation system 12 to the bone engaging surface 18, if desired. For example, the coupling features 24 can comprise annular protrusions that can extend from the bone engaging surface 18. It should be noted, however, that any type of coupling features 24 could be employed, if desired, such as threaded apertures, conical protrusions, apertures, notched protrusions, rectangular or polygonal protrusions, grooves, etc. The coupling features 24 can assist in coupling the resorbable fixation system 12 to the tibial tray 11, however, it should be noted that the coupling features 24 can be optional, and the resorbable fixation system 12 can be directly coupled to the bone engaging surface 18 or tibial tray 11.

[0023] The resorbable fixation system 12 can include one or more resorbable fixation members 30. Generally, the resorbable fixation members 30 can be arranged about a center C of the tibial tray 11, and typically can be arranged offset from the center C of the tibial tray 11. For example, two resorbable fixation members 30 can be coupled at a medial position on the tibial tray 11, and two of the resorbable fixation members 30 can be coupled at a

lateral position on the tibial tray 11. The use of a plurality of resorbable fixation members 30 about the center C of the tibial tray 11 eliminates the need for a central post to couple the tibial tray 11 to the anatomy, which can reduce stress-shielding of the tibia 14. The resorbable fixation members 30 can be directly coupled to the bone engaging surface 18, or can be coupled to the coupling features 24 of the bone engaging surface 18. In this regard, if the bone engaging surface 18 does not include the coupling features 24, then the resorbable fixation members 30 can be formed directly on the bone engaging surface 18.

[0024] If, however, the bone engaging surface 18 includes the coupling features 24, then the resorbable fixation members 30 can be configured to be coupled to the bone engaging surface 18, via the coupling features 24. For example, if the coupling features 24 comprise threaded apertures, then the resorbable fixation members 30 can include threads to enable the resorbable fixation members 30 to be threadably coupled to the tibial tray 11. If, for example, the coupling features 24 comprise protrusions, such as cylindrical protrusions, then the resorbable fixation members 30 can be molded or formed onto the protrusions, as shown in Fig. 2B. If the bone engaging surface 18 includes the porous structure 20 as shown in Fig. 2A, then the resorbable fixation members 30 can be coupled directly to the porous structure 20 by molding, for example. Further, the resorbable fixation members 30 can be coupled to the intermediate surface 22 such that the resorbable fixation members 30 extend through and beyond the porous structure 20, via a mechanical fastening technique, such as the use of mechanical fasteners, a press-fit, a snap-fit, etc. Generally, however, the resorbable fixation members 30 can be coupled to the bone engaging surface 18 such that none of the resorbable fixation members extend through to the bearing engaging surface 16.

[0025] The resorbable fixation members 30 can be composed of any suitable resorbable material, such as a resorbable polymer, a resorbable coral structure or combinations thereof. In addition, the resorbable material can also comprise Lactosorb® available from Biomet Inc. of Warsaw, Indiana, which comprises 82% L-Lactic acid and 18% glycolic acid.

[0026] The resorbable fixation members 30 can have a length L that can be selected based on the type of resorbable material to control the resorption rate of the resorbable fixation members 30. In this regard, the resorbable fixation members 30 can be configured such that the resorption of the resorbable fixation members 30 can occur at a rate substantially equal to the rate it takes for bone in-growth or bone integration to occur. Thus, at a certain point in time, the resorbable fixation members 30 can be resorbed by physiological processes, which can cause the loss of strength of the resorbable fixation members 30, but by that time, the bone integration can rigidly couple the tibial tray 11 to the anatomy. The use of the resorbable fixation members 30 can reduce the potential for stress shielding of the tibia 14 as the resorbable material does not provide long-term fixation. Rather, long-term fixation is provided by the bone in-growth on the tibial tray 11. Further, the use of the resorbable fixation members 30 can reduce the need for mechanical fasteners, such as screws, to couple the tibial tray 11 to the anatomy. By eliminating the need for mechanical fasteners, the need for bores extending through the tibial tray 11 can also be eliminated, which can thereby prevent wear debris from passing through the tibial tray 11.

[0027] The resorbable fixation members 30 can have a shape that enables the resorbable fixation members 30 to be press-fit into a prepared portion of the anatomy, while also preventing movement of the tibial tray 11 relative to the anatomy. For example, the resorbable fixation members 30 can comprise one or more formed geometric features 30a, such as barbs, discs, etc. that can be sized to resist movement of the tibial tray 11 relative to the tibia 14 (Fig. 3). As a further example, the resorbable fixation members 30 can comprise a polygonal shape, such as triangular, octagonal, octoangular or could comprise cylindrical projections, spherical projections, tapered projections, cruciate projections or any combination of the above.

[0028] In order to couple the tibial tray 11 to the anatomy, the tibial tray 11 can be prepared. In this regard, if the bone engaging surface 18 comprises the porous structure 20, then the porous structure 20 can be coupled to the intermediate surface 22 opposite the bearing engaging surface 16 (Fig. 2A).

Then, the resorbable fixation members 30 can be coupled to the bone engaging surface 18. If the bone engaging surface 18 comprises the coupling features 24, as illustrated in Fig. 2B, then the resorbable fixation members 30 can be coupled to the coupling features 24. If the bone engaging surface 18 does not include the coupling features 24, as shown in Fig. 1, then the resorbable fixation members 30 can be molded or formed directly onto the bone engaging surface 18. In either event, the resorbable fixation members 30 can generally be formed offset from the center C of the tibial tray 11. With the resorbable fixation members 30 coupled to the bone engaging surface 18, the tibial tray 11 can be prepared for insertion into the anatomy.

[0029] With reference to Fig. 3, prior to coupling the tibial tray 11 to the anatomy, the anatomy, such as the tibia 14, can be prepared as is generally known in the art. The anatomy can generally be prepared to include reamed apertures 40 (shown in phantom) that can correspond with the number of resorbable fixation members 30 coupled to the tibial tray 11. Then, the tibial tray 11 can be press-fit into the anatomy, and the resorbable fixation members 30 can engage the apertures 40 in the anatomy. It will be understood, however, that the apertures 40 are optional, and the resorbable fixation members 30 could be press-fit into the tibia 14 without the use of reamed apertures 40. Generally, the tibial tray 11 can be pressed into the anatomy until the bone engaging surface 18 is adjacent to the anatomy. The resorbable fixation members 30, when fully retained within the apertures 40, can resist the movement of the tibial tray 11 relative to the anatomy in all planes, and can further provide stability to the tibial tray 11 until bone integration occurs. Over time, bone in-growth can occur, such that the bone integration can couple the tibial tray 11 to the anatomy, and at that time, the resorbable fixation members 30 can be substantially resorbed through physiological processes.

[0030] While specific examples have been described in the specification and illustrated in the drawings, it will be understood by those of ordinary skill in the art that various changes can be made and equivalents can be substituted for elements thereof without departing from the scope of the present disclosure as defined in the claims. Furthermore, the mixing and matching of features, elements

and/or functions between various examples is expressly contemplated herein so that one of ordinary skill in the art would appreciate from this disclosure that features, elements and/or functions of one example can be incorporated into another example as appropriate, unless described otherwise, above. Moreover, many modifications can be made to adapt a particular situation or material to the teachings of the present disclosure without departing from the essential scope thereof. Therefore, it is intended that the present disclosure not be limited to the particular examples illustrated by the drawings and described in the specification as the best mode presently contemplated for carrying out this invention, but that the scope of the present disclosure will include any embodiments falling within the foregoing description and the appended claims.

CLAIMS

What is claimed is:

1. A press-fit prosthesis for replacing a portion of a bone comprising:

a first side;

a second side opposite the first side, the second side operable to engage the bone; and

at least one resorbable fixation member coupled to the second side such that the at least one resorbable fixation member does not extend through to the first side, the at least one resorbable fixation member coupled offset from a center of the second side, the at least one resorbable fixation member substantially resists movement of the prosthesis relative to the bone,

wherein the at least one resorbable fixation member resorbs at a rate that enables bone in-growth to fixedly couple the prosthesis to the bone.

2. The prosthesis of Claim 1, wherein the first side defines a bearing engaging surface that forms a barrier and the second side comprises a bone engaging surface.

3. The prosthesis of Claim 2, wherein the bone engaging surface comprises a porous metal or metal alloy structure, a solid metal or metal alloy structure, a porous coating, or combinations thereof.

4. The prosthesis of Claim 2, wherein the bone engaging surface further comprises at least one coupling feature and the at least one resorbable fixation member is formed on the at least one coupling feature.

5. The prosthesis of Claim 2, wherein the at least one resorbable fixation member comprises a plurality of resorbable members that are coupled offset from a center of the bone engaging surface such that none of the plurality of resorbable members are coupled to the center of the bone engaging surface.

6. The prosthesis of Claim 5, wherein the plurality of resorbable members include at least one feature to enable the prosthesis to be press-fit into a plurality of bores formed in the bone.

7. The prosthesis of Claim 6, wherein the at least one feature is sized to engage the plurality of bores formed in the bone such that the prosthesis does not substantially move relative to the bone.

8. The prosthesis of Claim 6, wherein the at least one feature is selected from the group comprising: a barb, a cylinder, a cruciate form, a projection, a polygon, a cone, a disk, a sphere and combinations thereof.

9. The prosthesis of Claim 2, wherein the at least one resorbable fixation member is molded onto the bone engaging surface.

10. The prosthesis of Claim 1, wherein the bone comprises a tibia, and the bearing engaging surface and bone engaging surface form a tibial tray, and the prosthesis further comprises:

a bearing positioned on the bearing engaging surface of the tibial tray; and

a femoral component that articulates relative to the bearing to form a knee joint.

11. The prosthesis of Claim 1, wherein the at least one resorbable fixation member is composed of a bio-resorbable material selected from the group comprising: a resorbable polymer, a resorbable coral structure or combinations thereof.

12. A press-fit prosthesis for replacing a portion of a bone comprising:

a tray operable to replace the portion of the bone, the tray including a first side that forms a barrier and a second side opposite the first side that facilitates bone in-growth; and

at least one resorbable fixation member coupled to the second side, the at least one resorbable fixation member adapted to be press-fit into a prepared portion of the bone to couple the tray to the bone, the at least one resorbable fixation member including at least one formed geometric feature that is operable to substantially resist movement of the tray relative to the bone,

wherein the at least one resorbable fixation member resorbs at a rate that enables bone in-growth to fixedly couple the second side of the tray to the bone.

13. The prosthesis of Claim 12, wherein the first side comprises a bearing engaging surface and the second side comprises a bone engaging surface that contacts the bone when the prosthesis is coupled to the bone.

14. The prosthesis of Claim 13, wherein the bone engaging surface comprises a porous metal or metal alloy structure, a solid metal or metal alloy structure, a porous coating, or combinations thereof, and the at least one resorbable fixation member is composed of a bio-resorbable material selected from the group comprising: a resorbable polymer, a resorbable coral structure or combinations thereof.

15. The prosthesis of Claim 14, wherein the bone engaging surface further comprises at least one coupling feature and the at least one resorbable fixation member is formed on the at least one coupling feature.

16. The prosthesis of Claim 14, wherein the at least one resorbable fixation member comprises a plurality of resorbable members that are coupled offset from a center of the bone engaging surface such that none of the plurality of resorbable members are coupled to the center of the bone engaging surface and none of the plurality of resorbable members extend through to the bearing engaging surface.

17. The prosthesis of Claim 12, wherein the at least one feature is sized to engage a plurality of bores formed in the bone such that the prosthesis does not substantially move relative to the bone.

18. The prosthesis of Claim 12, wherein the at least one feature is selected from the group comprising: a barb, a cylinder, a cruciate form, a projection, a polygon, a cone, a disk, a sphere and combinations thereof.

19. The prosthesis of Claim 13, wherein the bone comprises a tibia, and the tray is a tibial tray, and the prosthesis further comprises:

a bearing positioned on the bearing engaging surface of the tibial tray; and

a femoral component that articulates relative to the bearing to form a knee joint.

20. A press-fit prosthesis for replacing a portion of a bone comprising:

a tibial tray operable to replace a portion of a tibia, the tibial tray having a bearing engaging surface that forms a barrier and a bone engaging surface;

a bearing positioned on the bearing engaging surface of the tibial tray;

a femoral component operable to replace a portion of a femur and articulate relative to the bearing; and

a plurality of resorbable fixation members coupled to the bone engaging surface, offset from a center of the bone engaging surface such that none of the plurality of resorbable fixation members are coupled to the center of the bone engaging surface and none of the plurality of resorbable fixation members extend through to the bearing engaging surface, the plurality of resorbable fixation members operable to be press-fit into the tibia to couple the tibial tray to the tibia, the plurality of resorbable fixation members including at least one formed geometric feature that is operable to substantially resist movement of the tibial tray relative to the tibia, with the plurality of resorbable fixation members being composed of a bio-resorbable material selected from the group

comprising: a resorbable polymer, a resorbable coral structure or combinations thereof,

wherein the bone engaging surface comprises a porous metal or metal alloy structure, and the plurality of resorbable fixation members are operable to resorb at a rate that enables bone in-growth to fixedly couple the tibial tray to the tibia.

21. The prosthesis of Claim 20, wherein the bone engaging surface further comprises a plurality of coupling features and the plurality of resorbable fixation members are coupled to the plurality of coupling features.

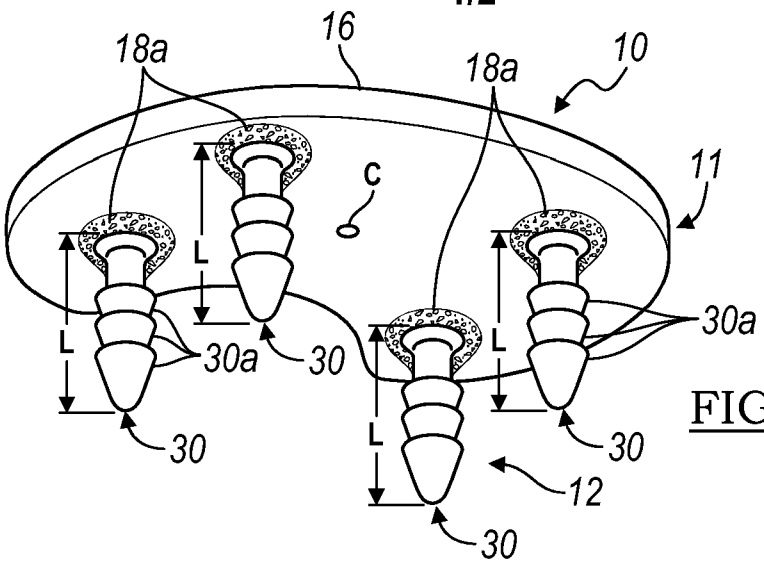

FIG. 1

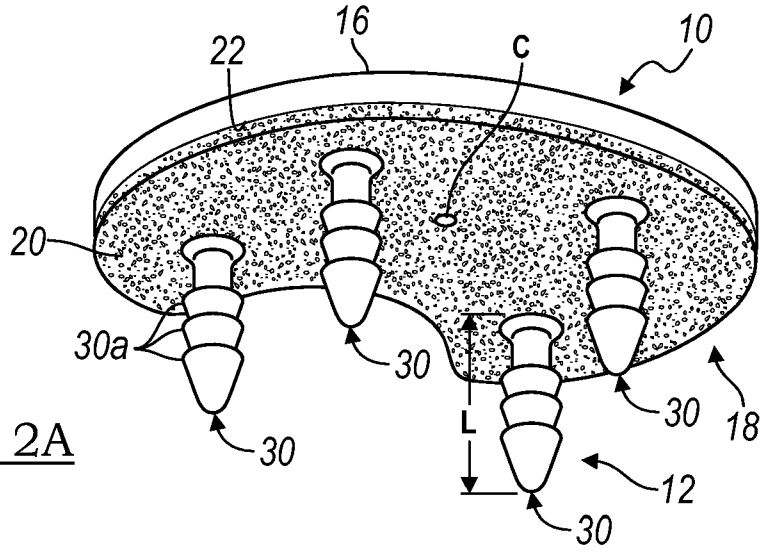

FIG. 2A

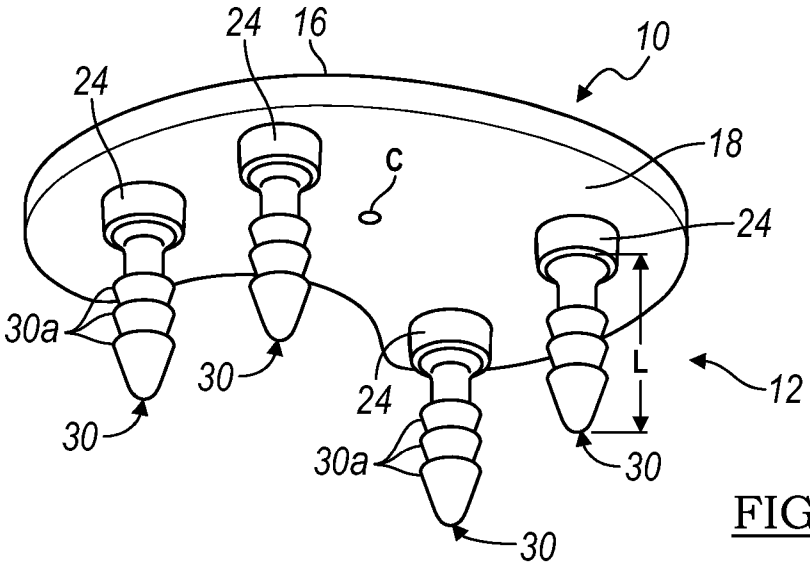

FIG. 2B

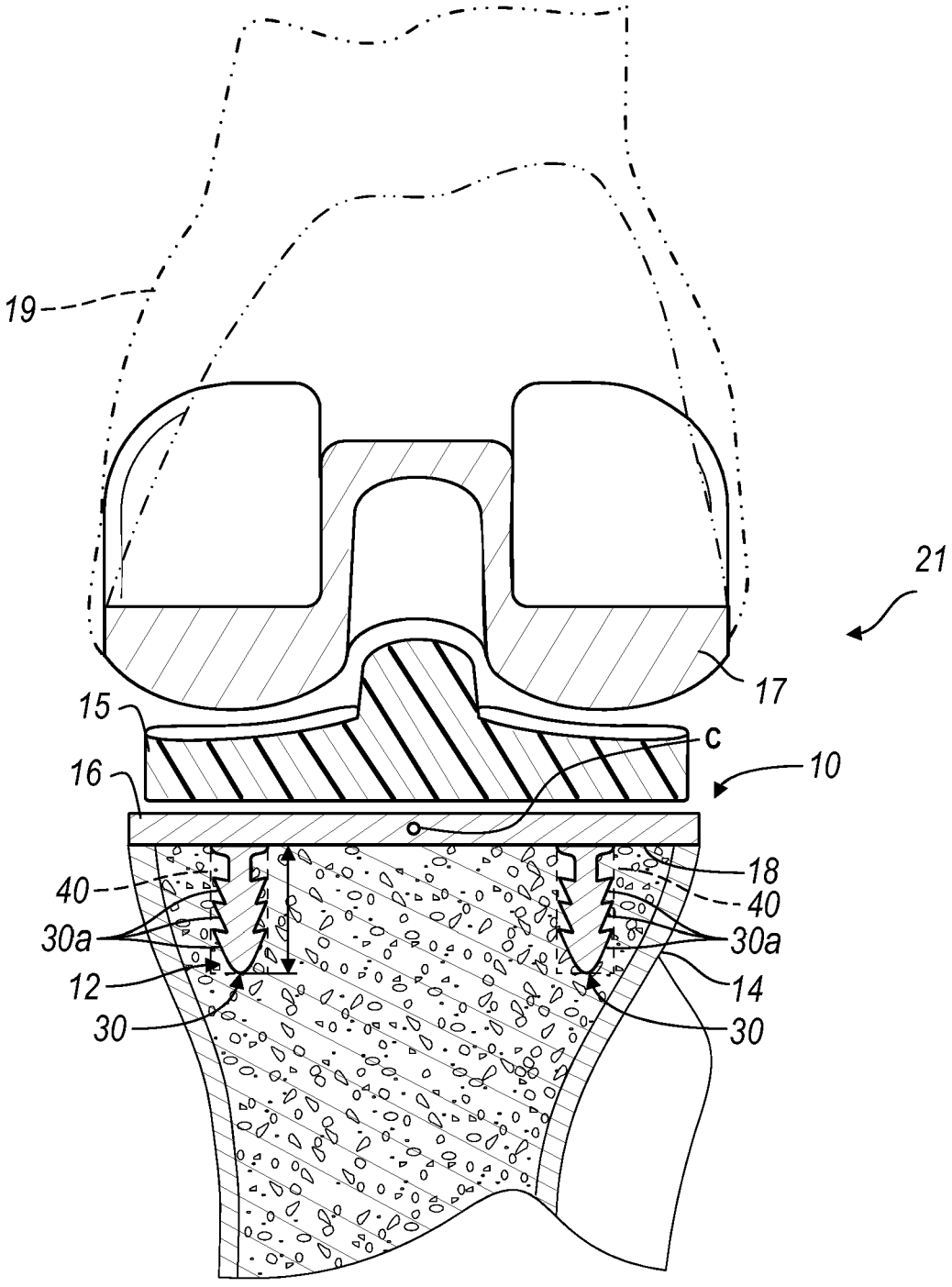

FIG. 3

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/035526

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61F2/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 867 301 A (DEPUY PRODUCTS INC [US]) 19 December 2007 (2007-12-19) figures 1-10 paragraphs [0008], [0024], [0032] - [0037] abstract	1-21
X	US 6 013 104 A (KAMPNER STANLEY L [US]) 11 January 2000 (2000-01-11) figure 4 column 7, line 39 - line 49 column 9, line 15 - line 67	12-15, 18,19
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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
26 May 2009	04/06/2009

Name and mailing address of the ISA/	Authorized officer
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Information on patent family members

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