IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ZIMMER HOLDINGS, INC.
ZIMMER, INC.
Petitioners

v.

BONUTTI SKELETAL INNOVATIONS LLC
Patent Owner

Patent No. 7,837,736
Filing Date: October 30, 2007
Issue Date: November 23, 2010
Title: MINIMALLY INVASIVE SURGICAL SYSTEMS AND METHODS

Inter Partes Review No. Unassigned

PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.100 *ET SEQ.*

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Exhibit 1017: Memorandum and Order Granting Defendants' Joint Motion to Stay Litigation Pending *Inter Partes* Review filed in *Bonutti Skeletal Innovations LLC v. Zimmer Holdings, Inc. & Zimmer, Inc.*, No. 1:12-cv-01107-GMS, Dkt. No. 45 (Apr. 7, 2014 D.

Pursuant to 35 U.S.C. §§ 311-319 and 37 C.F.R. § 42.100 *et seq.*, Zimmer Holdings, Inc. and Zimmer, Inc. ("Petitioners") request *inter partes* review of dependent claims 23-25 of the Bonutti U.S. Patent 7,837,736 ("Bonutti patent") (Ex. 1001).

This is the second petition filed by Petitioner in connection with the Bonutti patent. The first such petition ("First Petition") is the subject of *Inter Partes* Review No. IPR2014-00191, in which the Board issued a Decision instituting *inter partes* review on June 2, 2014 (the "Instituted IPR"). The Decision in the Instituted IPR is attached as Exhibit 1011. In that Decision, the Board instituted trial on some, but not all, of the claims that were challenged in the First Petition. In particular, the Board instituted trial with respect to claims 15-22, 26-28, and 31-36, but did not institute a trial on claims 23-25 that depend from claim 15. For dependent claims 23 and 24, the Board determined that these claims "explicitly require a 'dovetail joint,'" and that the prior art relied upon in the First Petition did not disclose or suggest such a structure. Trial was not instituted on dependent claim 25 because the First Petition did not provide a claim construction analysis for the means-plus-function limitation in this claim. Ex. 1011, pp. 8, 12, 13.

This Petition requests *inter partes* review of only claims 23-25, includes the allegedly missing features in the prior art for claims 23 and 24 and claim construction analysis for claim 25, and is based largely on prior art presented in the First Petition. A motion for joinder accompanies this Petition. Petitioners request that the Board grant this petition and institute trial.

I. NOTICES AND FORMALITIES

A. Real Parties in Interest

Zimmer Holdings, Inc. and Zimmer, Inc. are the real parties-in-interest for this petition ("Petition").

B. Related Matters

As noted above, this is the second petition for *inter partes* review filed by Petitioners in connection with the Bonutti patent. The first such petition is the subject of *Inter Partes* Review No. IPR2014-00191, in which the Board issued a Decision instituting *inter partes* review on June 2, 2014.

The Bonutti patent is the subject of a patent infringement lawsuit brought by Bonutti Skeletal Innovations LLC ("Patent Owner") against Petitioners in the United States District Court for the District of Delaware. The original complaint was served on January 4, 2013, and the Bonutti patent was added to the lawsuit in an amended complaint served on January 15, 2013. The Case No. of the lawsuit is

1:12-cv-01107-GMS. That lawsuit was stayed by a decision dated April 7, 2014, and remains stayed.

Petitioners are also the petitioners in *Inter Partes* Review Nos. IPR2014-00321, directed to U.S. patent 7,806,896, and IPR2014-00311, directed to U.S. patent 7,959,635, both of which are also the subject of the above-identified lawsuit. The Board issued a Decision instituting *inter partes* review, in part, in IPR2014-00321 on June 2, 2014. The Board issued a Decision denying institution of *inter partes* review in IPR2014-00311 on June 4, 2014. Petitioners are filing a second petition for *inter partes* review of U.S. patent 7,806,896 on the same date as this Petition.

Petitioners are also aware of *Inter Partes* Review Nos. IPR2013-00605, IPR2013-00620 and IPR2013-00621 brought by other petitioners, and that are directed to other patents that are the subject of the above-identified lawsuit.

C. Lead and Back-Up Counsel

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D. Service Information

Please address all correspondence to the lead counsel at the address shown above. Petitioners consent to electronic service to the email addresses above.

E. Grounds for Standing

Petitioners hereby certify that the patent for which review is sought is available for *inter partes* review and that Petitioners are not barred or estopped from requesting an *inter partes* review challenging the Bonutti patent claims on the grounds identified in this Petition. As noted above in section I.B., the amended complaint in the related litigation, which added the Bonutti patent to the litigation, was served on January 15, 2013. However, this petition is being timely filed with a motion requesting joinder with *Inter Partes* Review No. IPR2014-00191, and is proper pursuant to 35 U.S.C. § 315(b) and (c) and 37 C.F.R. § 42.122(b). *Samsung Elecs. Co. Ltd. v. Va. Innovation Scis., Inc.*, IPR2014-00557, Paper 10, at 14-16 (P.T.A.B. June 13, 2014); *Sony Corp. v. Yissum Res. & Dev. Co. of the Hebrew Univ. of Jerusalem*, IPR2013-00326, Paper 15, at 3-4 (P.T.A.B. Sept. 24, 2013); *Dell Inc. v. Network-1 Sec. Solutions, Inc.*, IPR2013-00385, Paper 17, at 4-6 (P.T.A.B. July 29, 2013); *Microsoft Corp. v. Proxyconn, Inc.*, IPR2013-00109, Paper 15, at 3-4 (P.T.A.B. Feb. 25, 2013).

F. Power of Attorney

A power of attorney designating counsel is being filed with this Petition.

G. Fees

The $9,000 request fee and the $14,000 post-institution fee (total of $23,000) are being paid with the electronic filing of this Petition. The Commissioner is authorized to charge any additional fees to our Deposit Account No. 06-0029, and to notify us of the same.

II. STATEMENT OF THE PRECISE RELIEF REQUESTED

Petitioners respectfully request that dependent claims 23-25 of the Bonutti patent be canceled based on the following grounds. A full statement of the reasons for this request is presented in later sections of this Petition. The grounds are supported by the Declaration of Arthur G. Erdman, Ph.D. ("Erdman Decl.," Ex. 1005; as filed with the First Petition), and a Second Declaration of Arthur G. Erdman, Ph.D. ("2nd Erdman Decl.," Ex. 1013)

- Ground 1: Claim 25 is unpatentable under 35 U.S.C. § 102(b) as being anticipated by the Walker et al. U.S. Patent 5,755,801 ("Walker patent," Ex.1002).[1]

[1] The Bonutti patent issued prior to the America Invents Act ("AIA"). Petitioners therefore use the pre-AIA statutory framework in this petition.

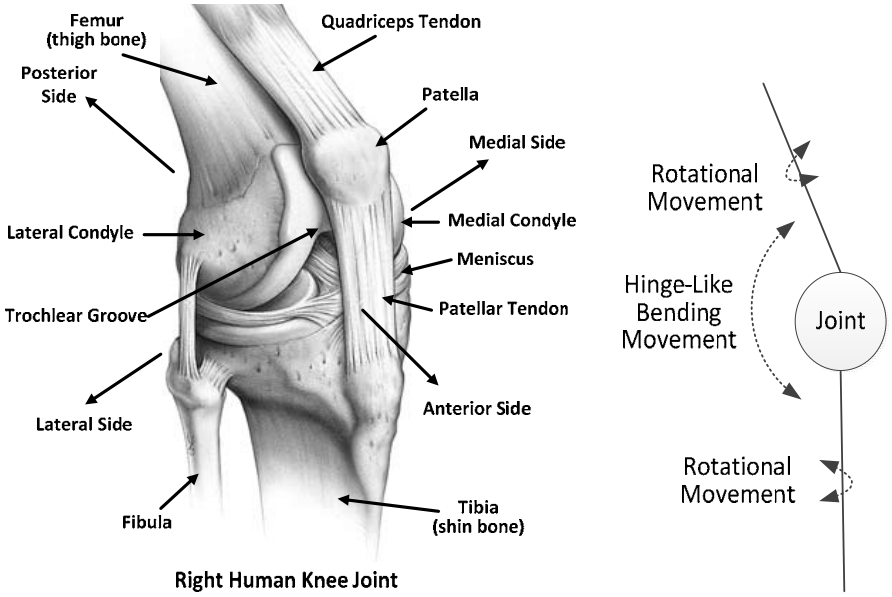
- Ground 2: Claims 23-25 are unpatentable under 35 U.S.C. § 103 as being obvious over the Walker Patent in View of the Buechel U.S. Patent 4,340,978 ("Buechel patent," Ex.1012).

III. OVERVIEW OF KNEE ANATOMY AND KNEE REPLACEMENT

Claims 23-25 depend from independent claim 15. These claims relate generally to joint repair and replacement - surgical procedures known as joint arthroplasty. More particularly, the challenged claim relates to knee joint replacement implants. *See, e.g.,* Ex. 1001, claims 15 and 25. The following overview of knee anatomy is substantially the same as that presented in the First Petition.

A. Knee Anatomy

A simplified description of the components and operation of the knee that are relevant to the challenged claims of the Bonutti patent can be provided with reference to the following illustrations of a right-side human knee joint and schematic.



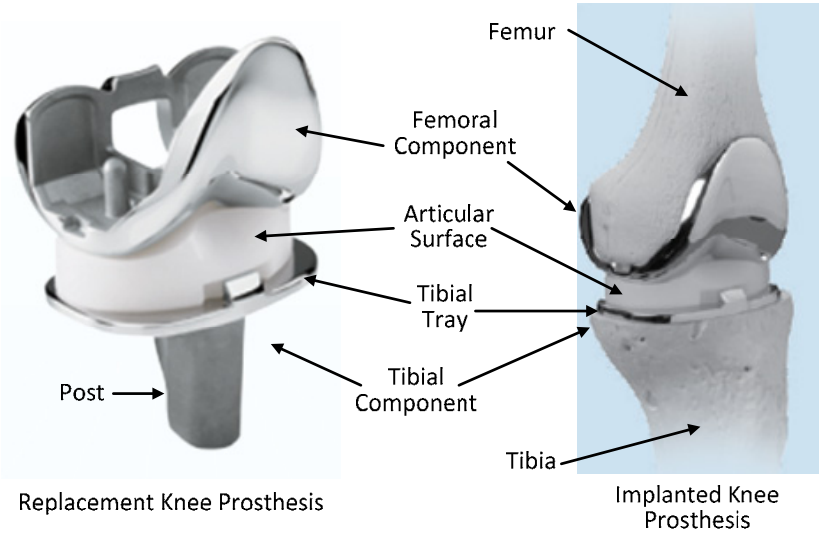
As shown, the knee joint connects the femur (upper leg bone) to the tibia (lower leg bone). The anterior side (front) of the joint is protected by the patella (kneecap). Two generally convex-shaped rounded areas, known as condyles, are located at the distal end (bottom) of the femur. The lateral condyle is located on the lateral side (outside) of the femur, and the medial condyle is located on the medial side (inside) of the femur. A groove-shaped area on the distal end of the femur, known as the trochlear groove, separates the lateral and medial condyles. Ex. 1005, Erdman Decl., ¶¶ 14-15.

The lateral and medial sides of the tibia have generally concave-shaped depressions that receive the corresponding condyles of the femur. A pad of cartilage, known as the meniscus, is located on the proximal end (top) of the tibia to protect the surfaces of the femur and tibia. Ex. 1005, Erdman Decl., ¶ 16.

When the knee bends, the condyles on the end of the femur move in a hinge-like manner with respect to the depressions in the tibia. The patella slides along the trochlear groove during bending of the knee. The kinematics of the knee joint are complex. In addition to providing the hinge-like movement, the condyles and meniscus accommodate axial rotation of the femur and tibia about their central longitudinal axes as the knee bends. Ex. 1005, Erdman Decl., ¶¶ 14, 18.

B. Knee Replacement Surgery

The following overview of knee replacement surgery is substantially the same as that presented in the First Petition. Features of a typical replacement knee implant or prosthesis that are pertinent to the challenged claims of the Bonutti patent can be described with reference to the following illustrations.



As shown, the replacement knee prosthesis includes a tibial component and a femoral component. The tibial component includes a tibial tray, and a bearing or

articular surface on the proximal upper surface of the tray. A mounting structure, such as a stem or post, can extend distally from the underside or bottom of the tibial tray. The femoral component has lateral and medial condyles that replace the surfaces of the corresponding condyles of the patient's femur. Similarly, the articular surface replaces the meniscus of the patient's knee joint, and has lateral and medial depressions that receive the corresponding condyles of the femoral component. Ex. 1005, Erdman Decl., ¶¶ 21-26.

During a surgical procedure to implant a prosthesis of this type, the surgeon will remove any remaining meniscus and cut off a thin slice from the proximal end of the tibia bone, a process known as resecting the tibia. The surgeon will also resect the femur by cutting the surfaces of the condyles to a shape that corresponds to the backside shape of the femoral component. The tibial component is mounted to the resected tibia, for example, by urging the stem into the bone. The femoral component is similarly mounted to the resected condyles of the femur. The articular surface is mounted to the upper surface of the tibial tray, between the tray and the femoral component. Ex. 1005, Erdman Decl., ¶¶ 28-38.

In operation, the articular surface of the implant functions as a replacement for the meniscus. The condyles of the femoral component move in the depressions of the articular surface when the knee bends. Ex. 1005, Erdman Decl., ¶¶ 24-25.

IV. OVERVIEW OF THE BONUTTI PATENT

A. The Claimed Invention

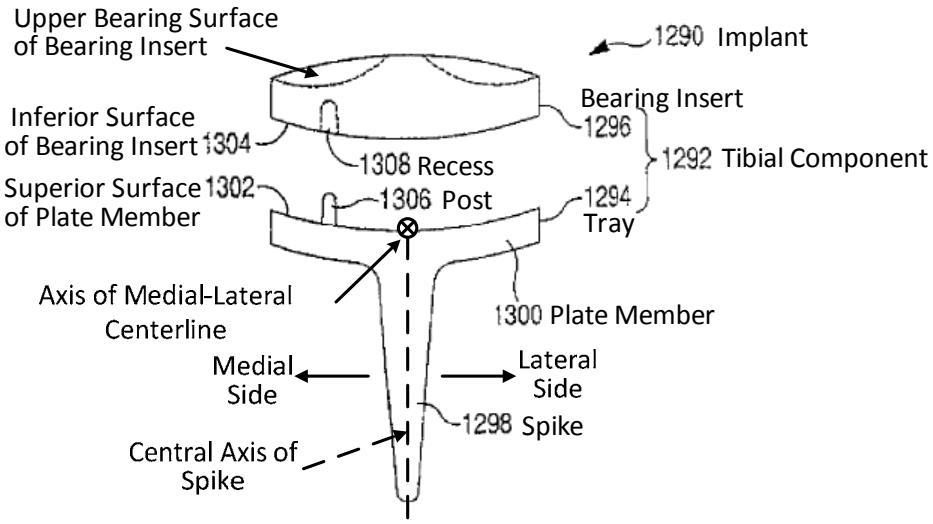
As a preliminary matter, Petitioners note that portions of the following overview through the discussion of Fig. 90 of the Bonutti patent are substantially the same as those in the First Petition.

The specification of the Bonutti patent describes a number of different implants, instruments and surgical procedures relating generally to knee and other joint replacement. *See, e.g.,* Ex. 1001, col. 1, ln. 40-col. 2, ln. 61. All the claims of the Bonutti patent, however, are directed to joint replacement devices and methods having a sliding or otherwise movable component that corresponds to the meniscal component of the joint. In particular, all the claims generally recite: (1) a first or base component, such as a tibial tray, that is fixed to a bone on a first side of the joint (e.g., is fixed to the tibia), and (2) a second or movable component, such as a tibial tray insert, that moves with respect to the base component and has a surface that engages a bone on a second side of the joint (e.g., engages the condyles of the femur).

In the context of knee joint replacement prostheses for the tibial side of the joint (i.e., tibial components), devices of this type are often referred to as "mobile bearing" knee prostheses. The Bonutti patent admits that mobile bearing knee prostheses were known in the prior art. *See, e.g.,* Ex. 1001, col. 101, ll. 35-43.

Claim 15, the dependent claim from which challenged claim 25 depends, is directed to mobile bearing prostheses having specific features. In particular, claim 15 is directed to a mobile bearing prosthesis that is configured to cause asymmetric movement of the movable component or tibial tray insert with respect to the center of the base component or tibial tray. An embodiment relating to claim 15 is described in the Bonutti patent at columns 101-102 with respect to Fig. 90. An annotated version of Fig. 90 is reproduced below.

Fig. 90
(annotated)



The implant 1290 is a mobile bearing knee implant that includes a tibial component 1292 and a femoral component (not shown in Fig. 90). Tibial component 1292 includes a tray 1294 and a bearing insert 1296 (also referred to as the "movable component" in the claims). Tray 1294 includes a plate member 1300 and a tapered spike 1298 (i.e., a stem or post) that extends from the bottom or

underside of the of the plate member for fixing the tibial component to the patient's tibia. The upper surface 1302 of the plate member 1300 is provided with a post 1306 that cooperates with a recess 1308 located in the underside 1304 of the bearing insert 1296. The post 1306 and recess 1308 permit rotation of the bearing insert 1296 with respect to the tibial tray 1294. *See, e.g.*, Ex. 1001, col. 101, ll. 6-34.

As shown in Fig. 90, the post 1306 is not located directly over the spike 1298 (a location defined as the center of the tibia). Ex. 1001, col. 101, ll. 55-56. Instead, the post 1306 is offset medially toward the medial compartment of the knee. Offsetting the post 1306 toward the medial compartment of the knee is said to recreate the natural pivoting motion of the knee. *See, e.g.*, Ex. 1001, col. 101, ll. 63-67.

1. Claim 15

Claim 15, the independent claim from which the challenged claims 23-25 depend, recites a device to replace an articulating surface of a first side of a joint in a body. Limitations recited by claim 15 include, *inter alia*:

(1) "a base component, including a bone contacting side … and a base sliding side on an opposite side … relative to said bone contacting side;"

(2) "a movable component, including a movable sliding side … matably positionable in sliding engagement with said base sliding side, and an articulating side on an opposite side … relative to said movable sliding side …;"

(3) "a protrusion extending from … said base sliding side …, said protrusion substantially offset with respect to a midline of the first side of a joint;" and

(4) "a recess sized to receive said protrusion, disposed in the … movable sliding side, said protrusion and recess matable to constrain movement of said first and second components relative to each other, thereby promoting movement of the joint within desired anatomical limits."

2. Claims 23-25

Challenged claim 23 depends from claim 15 and recites the protrusion as being a dovetail pin, the recess as being a dovetail tail, and the elements together forming a dovetail joint.

Challenged claim 24 depends from claim 23 and recites the dovetail joint as being elongated, extending in an anterior-posterior orientation to enable "anterior-posterior displacement of the base sliding side relative to the movable sliding side."

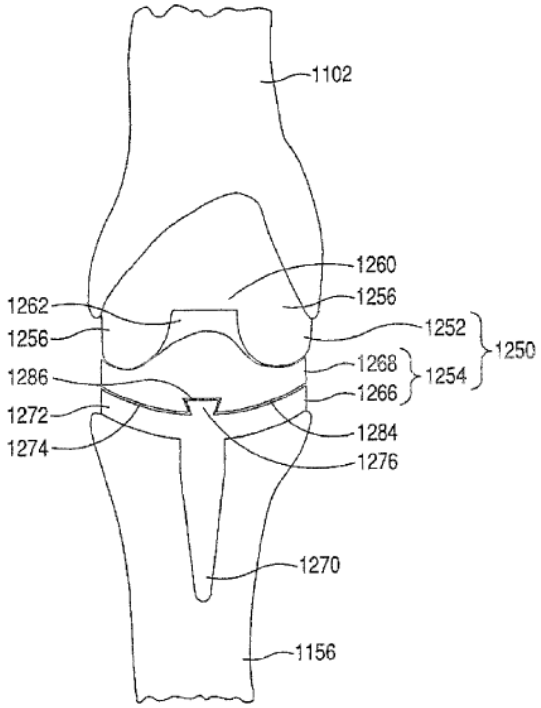
Challenged claim 25 depends from claim 15 and recites the device as further including "means associated with said protrusion to prevent a separation of said base sliding side relative to the movable sliding side."

The specification of the Bonutti patent, however, has no disclosure of the dovetail joint recited in claims 23 and 24 or the means associated with the protrusion recited in claim 25. Ex. 1013, 2nd Erdman Decl., ¶ 11. The embodiment relevant to the claims-at-issue is the one shown in Fig. 90. Ex. 1005, Erdman Decl., ¶ 42. Ex. 1013, 2nd Erdman Decl., ¶¶ 9-11. Specifically, with respect to claims 23 and 24, that figure and the associated description do not disclose that the claimed protrusion is a dovetail pin and the recess is a dovetail tail. As for claim 25, Fig. 90 and the associated description also fail to disclose structure associated with the claimed protrusion (e.g., post 1306) to prevent separation of the base sliding side and the movable sliding side (e.g., bearing insert 1296 and the tray 1294). *See, e.g.*, Ex. 1001, col. 101, ln. 6 – col. 102, ln. 28.

Patent Owner may rely on Figs. 80, 88 and 89 and the description corresponding to these figures to show support for the features of claims 23-25. Specifically, the Patent Owner may ask that the Board consider (1) the tibial component 1254 of what is characterized as a "self-centering" mobile bearing implant shown in Figs. 88 and 89 and described at col. 99, ln. 34 – col. 101, ln. 5,

and (2) the tibial tray 1186 shown in Fig. 80 and described at col. 97, ln. 33 – col. 98, ln. 5. Fig. 88 is reproduced below.

Fig. 88



The described tibial component includes a tray 1266 having a tapered keel or spike 1270, and a bearing insert 1268. The superior surface 1274 is provided with a track 1276 that cooperates with a groove 1286 located on bearing insert 1268 so that sliding motion can occur substantially in the anterior-posterior direction. Ex. 1001, col. 99, ll. 56-77.

Patent Owner may argue that although there is no express description of the cooperating track and groove as a dovetail joint as required by claims 23 and 24 or

as providing a "separation prevention" function as required by claim 25, one of ordinary skill would have relied on these disclosures as support for claims 23-25. In so doing, the Patent Owner may also point to Fig. 80 and argue that a similarly shaped slot 1190 on the bottom, tibia-engaging side of the tibial tray 1186, which is referred to in the Bonutti patent as having a "dove tail shape," supports such an interpretation of Figures 88 and 89. Ex. 1001, col. 97, ln. 59 – col. 98, ln. 5.

Petitioners would disagree with any such Patent Owner's interpretation at least because Figures 80, 88 and 89 do not relate to the claimed invention as they do not include a protrusion substantially offset with respect to a midline of the first side of a joint, as required by the claims.

In addition, Patent Owner may argue that the shape of the post 1306 provides the structure for the means recited in claim 25. Petitioners would again disagree at least because the drawing and the corresponding description of post 1306 do not show or discuss a shape that provides the separation function recited in claim 25.

B. The Prosecution History

Claims 15 and 23-25 were originally added to the Bonutti patent application (as claims 138 and 144-146, respectively) in a restriction requirement response filed on January 19, 2010. In the next Office Action mailed on March 11, 2010, claim 15 and all the claims depending therefrom (including claims 23-25) were

rejected under 35 U.S.C. § 102 as being anticipated by the Herrington U.S. Patent 5,997,577. In a responsive amendment filed on June 18, 2010, the applicant made amendments that it asserted "serve to clarify the present invention and are independent of patentability," and argued that the Herrington patent disclosed a tibial component having a tibial insert "firmly fixed" to the tibial tray when the tibial component is used in the body. Ex. 1006, June 18, 2010 response, pp. 11-12. In effect, the patent applicant distinguished the applied Herrington patent as not even disclosing a mobile bearing knee component, much less such a component having the features recited in the claims. All the claims were allowed in a Notice of Allowability that followed the June 18, 2010 response.

C. Priority Date of the Bonutti Patent

The Bonutti patent claims priority to a number of other U.S. patent applications. Based on a review of these earlier applications, application no. 10/191,751, filed on July 8, 2002 (now patent 7,104,996), is the earliest that includes the mobile bearing tibial component embodiment discussed above and described with reference to Fig. 90 in the Bonutti patent. But as discussed above, claims 23-25 are not supported by the specification, including Fig. 90. For purposes of this petition, however, Petitioners have assumed the priority date for the claims of the Bonutti patent challenged in this Petition is July 8, 2002.

The Petitioners reserve the right to respond accordingly in the event the Patent Owner alleges an earlier date of invention.

V. OVERVIEW OF THE PRIOR ART RELIED UPON FOR THE CHALLENGE

A. The Walker Patent

The Walker et al. U.S. Patent 5,755,801 ("Walker patent," Ex. 1002) discloses a replacement knee prosthesis. The Walker patent issued on May 26, 1998, and is a § 102(b) prior art patent to the Bonutti patent.

The prosthesis has a femoral component and a tibial component. The tibial component is a "mobile bearing" device that includes a tibia-engaging tibial platform and a meniscal component configured to provide for limited movement of the meniscal component on the tibial platform. Importantly, like the challenged claims of the Bonutti patent, the Walker patent discloses a mobile meniscal component that moves about an axis that is substantially offset in the medial direction from the center of the component.

The "second embodiment" of the Walker patent shown in Figs. 2-2c has certain features of particular relevance to the challenged claim of the Bonutti patent. As noted in the Walker patent, the second embodiment shown in Figs. 2-2c "has a number of similarities with that shown in FIGS. 1 to 1e and only the differences are described." Ex. 1002, col. 4, ll. 3-6. FIGS. 4a-4d also show

features of the embodiments shown in FIGS. 1-3. *See, e.g.,* Ex. 1002, col. 5, ll. 23-28. For these reasons, the relevant features of the device shown in the Walker patent are described below with reference to the drawing figures of the different embodiments.

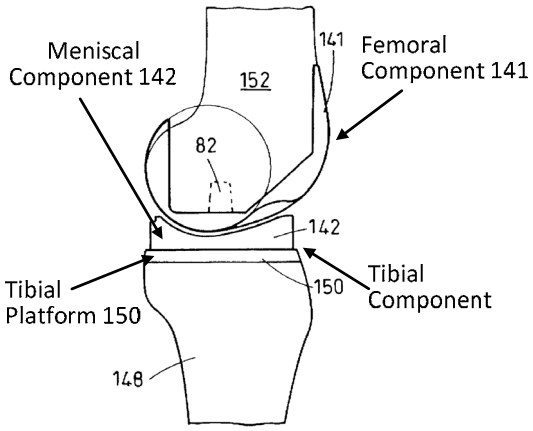


Fig.4(c)
(Annotated)

As shown in the annotated version of Fig. 4c above, the replacement knee prosthesis has a femoral component 141 and a two-part tibial component that includes a tibial platform 150 and the movable meniscal component 142. *See, e.g.,* Ex. 1002, col. 4, ln. 59-col. 5, ln. 37.

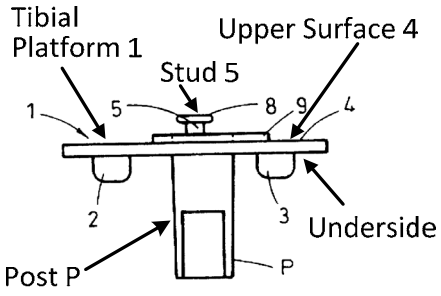


Fig.1b
(Annotated)

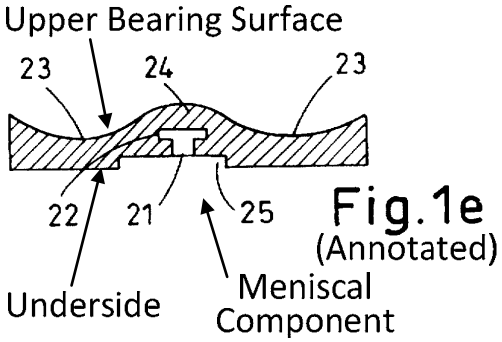


Fig.1e
(Annotated)

As shown in the annotated version of Fig. 1b, above, the tibial platform 1 has an underside that engages the tibia, and an upper surface 4 to which the meniscal component 44 is mounted. The movable meniscal component 44 is shown in the annotated version of Fig. 1e, above, and has an underside and an upper bearing surface side. The upper side has depressions 23 to receive the condylar bearing surfaces of the femoral component 141 (shown in Fig. 4c, above). *See, e.g.*, Ex. 1002, col. 3, ln. 12-col. 4, ln. 53.

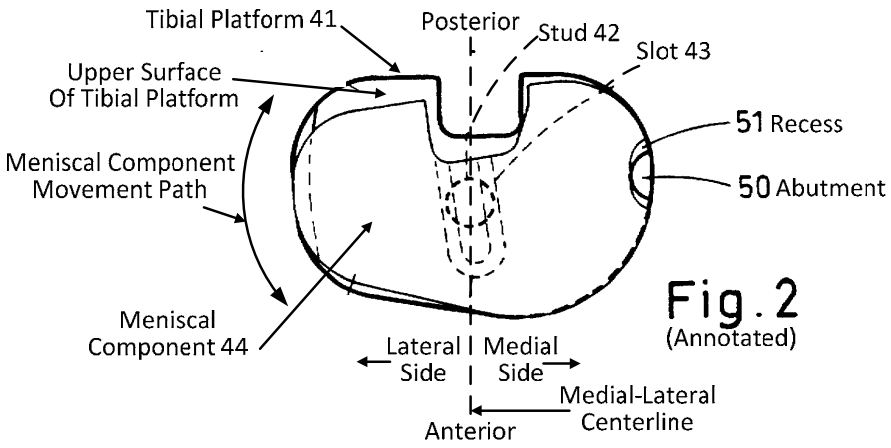


Fig. 2
(Annotated)

The above annotated version of Fig. 2 illustrates other features and the operation of the tibial component. An abutment 50 is upstanding on the upper surface of the tibial platform 41. As shown, the abutment 50 is located on the medial side of the medial-lateral centerline of the tibial platform 41. A recess 51 is formed in the medial side of the meniscal component 44. The meniscal component 44 is fitted to the tibial platform 41 by engaging the abutment 50 in the recess 51. The meniscal component 44 can thereby rotate along an arcuate path about the

medially displaced axis of the abutment 50. A stop that limits the range of rotation of the meniscal component 44 in the posterior direction with respect to the tibial platform 41, and that prevents the meniscal component from lifting off the tibial platform, is provided by the stud 42 that extends from the tibial platform and is received in the slot 43 in the underside of the meniscal component. *See, e.g.,* Ex. 1002, col. 4, ll. 3-53.

B. The Buechel Patent

The Buechel et al. U.S. Patent 4,340,978 ("Buechel patent," Ex. 1012) discloses a meniscal bearing knee replacement. The Buechel patent issued on July 27, 1982, and is prior art to the Bonutti patent under §§ 102(b).

Figs. 32A, 32B, 16, 18 and 19 of the Buechel patent are reproduced below. As shown, the implant has a femoral component 111, a tibial platform component 116 and an intermediate tibial bearing component 117. The tibial platform 116 has two tracks 148 and 153 that receive and partially constrain movement of the tibial bearing components 117. Ex. 1012, col. 15, ll. 14-32. The bearing surface of the bearing component 117 has a "projecting dovetail surface" 144 that matingly engages the track surfaces . Ex. 1012, col. 15, ll. 14-21.

FIG. 32A

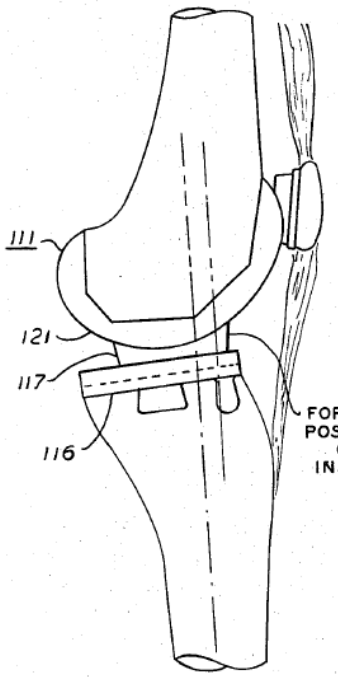


FIG. 32B

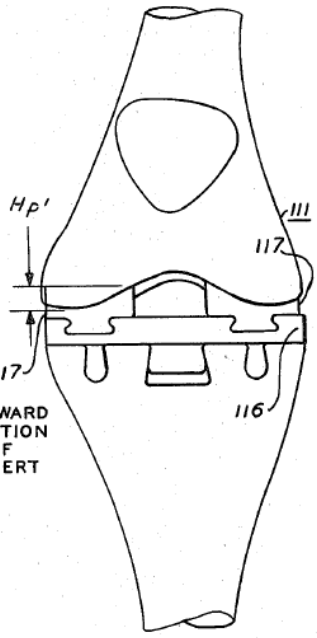


FIG. 16

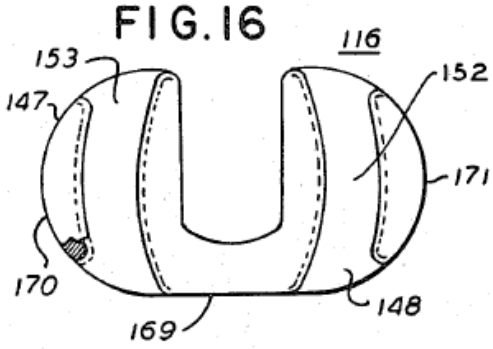


FIG. 18

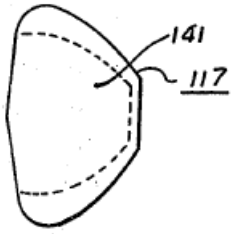
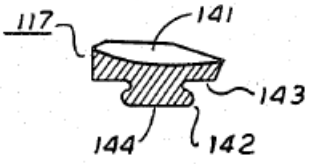


FIG. 19



As the knee is flexed slightly, the intermediate tibial bearing components 117 move rearward relative to the tibia (i.e., in the anterior-posterior direction).

Additional flexure produces a small additional posterior shift of the tibial bearing components 117. Ex. 1012, col. 14, ll. 19-27.[2]

VI. CLAIM CONSTRUCTION AND LEGAL STANDARDS

A. Construction of Certain Claim Terms

A claim in *inter partes* review is given the "broadest reasonable construction in light of the specification." 37 C.F.R. § 42.100(b). For purposes of this proceeding, claims terms are presumed to possess their broadest reasonable ordinary and customary meanings. However, Petitioners note that the standards of construction applied in this proceeding are not necessarily those which will be applied in the related litigation, and, as such, reserve all rights to proffer in that related litigation claim construction positions in conformity with the standards applicable therein. In view of these legal standards, the Petitioners respectfully request that the Board consider the following issues relating to claim construction.

1. "Dovetail Joint" (claims 23 and 24)

[2] The Buechel patent is just one of many prior art references that disclose the use of dovetail joint structures to retain meniscal bearings on tibial trays of tibial knee prostheses. Others include the Hood et al. U.S. Patent 5,370,699 (Ex. 1014) and the Bahler U.S. Patent 5,282,868 (Ex. 1015). Ex. 1013, 2nd Erdman Decl., ¶¶ 14, 20, 21.

Claim 23 recites the offset "protrusion is a dovetail pin and said recess is a dovetail tail, together forming a dovetail joint." However, as discussed above in section IV.A., the specification of the Bonutti patent provides no support for any such "offset" dovetail joint.

As noted above, the Patent Owner may argue that the dovetail joint structures described in connection with the embodiment shown in Figs. 88 and 89 support the limitations of claims 23 and 24. *See e.g.*, section IV.A. above. The Petitioners would disagree with any such assertion. However, if the Board finds that these claims are supported, they would be invalid on the basis of the Walker patent and Buechel patent (Ground 2, discussed in detail below).

2. Means-Plus-Function Clause (Claim 25)

Claim 25 recites "means associated with said protrusion to prevent a separation of said base sliding side and said movable sliding side." In the Decision in the Instituted IPR, the Board found that § 112, ¶ 6 applies to this claim limitation, and that the recited function is "to prevent separation of said base sliding side and said movable sliding side." Ex. 1011, p. 8.

However, as discussed above in section IV.A., the specification of the Bonutti patent provides no support for any such "offset" means. In particular, the protrusion (e.g., post 1306) has no expressly described structure, material, or action corresponding to that claim function (i.e., to prevent separation of the bearing

insert and the tray). As also discussed above, the Patent Owner may point to (1) the shape of post 1306 and allege that the shape of the post (and its equivalents) are the structure that provide support for the claimed function or (2) Figures 80, 88, and 89 to allege that they show a dovetail joint and that a dovetail joint (and equivalents) provide support for the claimed function. To the extent the Patent Owner does so and the Board agrees with the Patent Owner, Petitioners submit that claim 25 would be invalid in view of the Walker patent (Ground 1 discussed below) or the Walker patent in view of the Buechel patent (Ground 2 discussed below).

B. Threshold Requirement for *Inter Partes* Review

A petition for *inter partes* review must demonstrate "a reasonable likelihood that the petitioner would prevail with respect to at least one of the claims challenged in the petition." 35 U.S.C. § 314(a). This Petition meets this threshold. As explained below, all elements of claims 23-25 of the Bonutti patent are taught in the prior art references.

VII. STATEMENT OF REASONS FOR RELIEF REQUESTED

A. Ground 1: Claim 25 is Unpatentable as Being Anticipated by the Walker Patent

1. Claim 15

Since claim 25 depends from independent claim 15, the Petitioners first provide the following statement of reasons why claim 15 is unpatentable as being anticipated by the Walker patent. Petitioners note that this statement is substantially the same as that presented in connection with claim 15 in the Corrected Petition for *Inter Partes* Review in IPR2014-00191, and is the basis on which the Board authorized *inter partes* review of claim 15 in the Instituted IPR. Ex. 1011, p. 17.

The Walker patent discloses a mobile bearing tibial component of a knee implant having each and every limitation of claim 15 of the Bonutti patent. *See,* Ex. 1005, Erdman Decl., ¶¶ 45-69. Claim 15 is therefore anticipated by the Walker patent. A claim chart mapping the features of the Walker patent to the limitations of this claim is provided below.

Claim 15	Walker Patent (Ex. 1002)
15. A device to replace an articulating surface of a first side of a joint in a body,	The Walker patent discloses a knee prosthesis having a tibial component including a tibial platform 41 and a plastic meniscal component 44 mounted on the tibial platform. *See, e.g.,* col. 4, ll. 3-33; Figs. 2-2c. The meniscal component 44 has an upper bearing surface with depressions 23 to receive the condylar bearing surfaces of the femoral part of the prosthesis (i.e., is

	configured to replace the articulating surface of the patient's natural tibia). *See, e.g.,* col. 3, ll. 37-40; Figs. 1e, 4c.
the joint having first and second sides, comprising:	The patient's knee joint that is replaced by the prosthesis has tibial (i.e., first) and femoral (i.e., second) sides. *See, e.g.,* Abstract; Fig. 4c.
a base component,	The tibial platform 41 is a base component.
including a bone contacting side connectable with bone on the first side of the joint, and	The tibial platform 41 has a bone contacting underside with downwardly extending projections 2, 3 and a post P for engaging the platform in the resected end of the tibia. *See, e.g.,* col. 3, ll. 12-21; col. 4, ll. 3-6; col. 5, ll. 25-28; Figs. 1a, 1b, 4c.
a base sliding side on an opposite side of said base component relative to said bone contacting side;	The tibial platform 41 has an upper surface 4 (i.e., a base sliding side) that is on a side opposite the bone contacting underside. *See, e.g.,* col. 3, ll. 12-21; col. 4, ll. 3-6; Figs. 1, 1b. The meniscal component 44 slides on the upper surface 4 of the tibial platform 41, so the upper surface of the tibial platform is a sliding side. *See, e.g.,* col. 4, ll. 37-40.
a movable component,	The meniscal component 44 is a movable component. *See, e.g.*, col. 4, ll. 16-21.
including a movable sliding side, said movable sliding side being matably positionable in sliding engagement with said base sliding side, and	The meniscal component 44 has an underside having a slot 43 that includes a groove 45. The underside of the meniscal component 44 slides on the tibial platform 41, and is therefore a sliding side. The slot 43 and groove 45 receive the head of the stud 42 extending from the tibial platform 41, so the underside of the meniscal component 44 is matably positionable in sliding engagement with the upper surface of the tibial platform. *See, e.g.,* col. 4, ll. 7-21.
an articulating side on an opposite side of said movable component relative to said movable	The upper bearing surface side of the meniscal component 44 is opposite the underside and is shaped with depressions 23 to receive the condylar bearing surfaces of the femoral part of the prosthesis (i.e., is an

sliding side, shaped to matingly engage an articulating surface of the second side of the joint;	articulating side shaped to engage and mate with the articulating surface of the femoral side). *See, e.g.,* col. 1, ll. 8-20; col. 3, ll. 37-40; Fig. 4c.
a protrusion extending from one of said base sliding side or movable sliding side, said protrusion substantially offset with respect to a midline of the first side of a joint;	Semicircular abutment 50 (i.e., a protrusion) is upstanding at the upper surface of the tibial platform 41 (i.e., extends from the base sliding side). *See, e.g.,* col. 4, ll. 22-28; Figs. 2-2c. Ex. 1005, Erdman Decl., ¶¶ 46, 50. The abutment 50 is at the medial side of the tibial platform 41, and is substantially offset from the medial-lateral centerline P-Q (i.e., the centerline that separates the medial and lateral sides of the platform). *See, e.g.*, col. 3, ll. 16-21; col. 4, ll. 22-28; Figs. 1, 2. The meniscal component 44 rotates about a medially displaced axis. Col. 5, ll. 38-40. Ex. 1005, Erdman Decl., ¶¶ 46, 50.
a recess sized to receive said protrusion, disposed in the other of said base sliding side or movable sliding side, said protrusion and recess matable to constrain movement of said first and second components relative to each other, thereby promoting movement of the joint within desired anatomical limits.	Notch or recess 51 is engaged by the abutment 50 and is formed in the corresponding portion of the meniscal component 44 (i.e., is disposed in the movable sliding side). *See, e.g.,* col. 4, ll. 22-33; Figs. 2-2c. Ex. 1005, Erdman Decl., ¶¶ 46, 50. The engaged abutment 50 and recess 51 control the rotation of the meniscal component 44 about an axis at the medial side edge of the tibial platform 41. *See, e.g.*, col. 4, ll. 22-25; Figs. 2-2c. Movement of the meniscal component 44 is limited and constrained to rotation about the medially displaced axis. Col. 5, ll. 38-40. The recess 51 is formed to allow the meniscal component 44 to move approximately 2 mm in an anterior and posterior direction. Col. 4, ll. 25-28. Figs. 2a and 2b show different relative positions of the meniscal component 44 on the tibial platform 41 at different degrees of internal and external rotation. *See, e.g.,* col. 4, ll. 34-36. An aim of this prosthesis design is to replicate the natural movements of the knee. Col.

	1, ll. 5-20. Ex. 1005, Erdman Decl., ¶¶ 46, 50.

2. Claim 25

Claim 25 depends from claim 15 and recites the device as further including "means associated with said protrusion to prevent a separation of said base sliding side and said movable sliding side." As noted above, the function associated with this means limitation is "to prevent a separation of said base sliding side and said movable sliding side." Moreover, the specification fails to disclose any corresponding structure. For purposes of this ground, however, Petitioners have assumed that the Board finds that the shape of the protrusion and its equivalents are structures that correspond to the claimed function. Assuming that is the case, the Walker patent anticipates this claim. Specifically, abutment 50 and its semicircular shape prevent separation of the base sliding side and the movable sliding side, as required by claim 25. *See, e.g.,* col. 4, ll. 23-34; Figs. 2, 2a-2c; Ex. 1013, 2nd Erdman Decl., ¶¶ 16, 26. For instance, the Walker patent states that "the meniscal component can be *fitted* to the tibal platform by engaging the abutment 50 in the recess 51 and then the stud 42 in its corresponding slot 43." *Id*. at col. 4, ll. 30-34 (emphasis added). From this disclosure, one of ordinary skill would have understood that the Walker patent's abutment 50 and its semicircular shape prevent separation, as required by claim 25. Ex. 1013, 2nd Erdman Decl., ¶¶ 16, 26. The

claim chart below provides further support for why the Walker patent anticipates claim 25.

Claim 25	Walker Patent (Ex. 1002)
25. The device of claim 15, further including means associated with said protrusion to prevent a separation of said base sliding side and said movable sliding side.	Rotation of the meniscal component 44 about an axis X at the edge of the tibial platform is controlled by a semi-circular abutment 50 which is upstanding at the medial side of the platform. A recess or notch 51 is formed in the corresponding portion of the meniscal component and is rounded as shown to allow approximately 2 mms movement in an anterior and posterior direction. FIG. 2c shows the manner in which the meniscal component can be fitted to the tibial platform by engaging the abutment 50 in the recess 51 and then the stud 42 in its corresponding slot 43. Ex. 1002, col. 4, ll. 23-34.

B. Ground 2: Claims 23-25 are Unpatentable as Being Obvious Over the Walker Patent in View of the Buechel U.S. Patent

As an initial matter, Petitioners note that Ground 2 presented in this Petition is not redundant with Ground 1. The structures pointed to in the Buechel patent as corresponding to the claim elements are different than the structures pointed to in the Walker patent. This ground is needed to address claims 23 and 24. It is also needed to address claim 25 if the Board adopts a particular construction for claim 25.

1. Claim 23

Claim 23 is obvious over the Walker patent in view of the Buechel patent. As discussed above in connection with claim 15, the abutment 50 and recess 51 of

the Walker patent cooperate to provide an "offset" rotational axis for the meniscal component 44 with respect to the tibial platform 41 in a mobile bearing implant. The Buechel patent similarly discloses a dovetail joint structure including a dovetail surface 144 on the bearing component that mates with the dovetail tracks on the tibial platform component 116 to enable constrained movement of the bearing component on the platform component. Ex. 1013, 2nd Erdman Decl., ¶¶ 17-19. For a number of reasons, it would have been obvious to a person of ordinary skill in the art to substitute the dovetail joint structures of the Buechel patent for the abutment and recess of the Walker patent. Ex. 1013, 2nd Erdman Decl., ¶¶ 17-19, 27.

The Walker and Buechel patents both relate to the same field of endeavor – knee replacement prostheses having tibial components including bearings or meniscal components mounted to a tibial tray for constrained movement. Ex. 1013, 2nd Erdman Decl., ¶ 27. The protrusion and recess of the Walker patent and the dovetail joint structures of the Buechel patent are used to mount the bearings to the tibial tray for constrained movement in tibial components of both references. Ex. 1013, 2nd Erdman Decl., ¶¶ 16, 27. Because of the similar functionality of these structures in tibial knee components, such a substitution would have been a matter of routine engineering and design choice. Ex. 1013, 2nd Erdman Decl., ¶ 27. Moreover, the substitution in this manner yields the predictable results of

constrained motion between the bearing and tibial tray. Reasons such as these are hallmarks of obviousness under the Supreme Court's decision in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 127 S.Ct. 1727 (2007).

A claim chart mapping the features of the Buechel patent to claim 23 is provided below.

Claim 23	Buechel Patent (Ex. 1012)
23. The device of claim 15, wherein said protrusion is a dovetail pin and said recess is a dovetail tail, together forming a dovetail joint.	The projecting dovetail surface 144 from the tibial bearing component 117 is a dovetail pin. The mating track of the tibial platform component 116 is a dovetail tail. The dovetail pin and tail cooperate to form a dovetail joint. *See, e.g.*, col. 15, ll. 14-32; col. 16, ll. 35-41; Figs. 18, 19, 32A, 32B. Ex. 1013, 2nd Erdman Decl., ¶¶ 17-19, 27.

2. Claim 24

Claim 24 is obvious over the Walker patent in view of the Buechel patent. The dovetail joint structures shown in Buechel patent extend in a substantially anterior-posterior orientation, and enable anterior-posterior displacement of the base sliding side relative to the movable sliding side. *See, e.g.*, Ex. 1012, col. 14, ll. 18-27; col. 15, ll. 22-32; Figs. 16, 32A; Ex. 1013, 2nd Erdman Decl., ¶¶ 17-19. Moreover, for the reasons discussed above in connection with claim 23, it would have been obvious for a person of ordinary skill in the art to substitute the elongated and anterior-posterior oriented dovetail joint of the Buechel patent for the abutment and recess of the Walker patent. Ex. 1013, 2nd Erdman Decl., ¶ 28.

A claim chart mapping the features of the Buechel patent to claim 24 is provided below.

Claim 24	Buchel Patent (Ex. 1012)
24. The device of claim 23, wherein said dovetail joint is elongated, extends in a substantially anterior-posterior orientation, and enables anterior-posterior displacement of the base sliding side relative to the movable sliding side.	The dovetail joint, including tracks 148 and 153, are elongated and extend in an anterior-posterior orientation. *See, e.g.*, col. 14, ll. 18-27; col. 15, ll. 22-32; Figs. 16, 32A. Ex. 1013, 2nd Erdman Decl., ¶¶ 17-19. The elongated dovetail joint enables the tibial bearing component 117 to move rearward (i.e., anterior-posterior displacement) relative to the tibial platform 116. *See, e.g.*, col. 14, ll.18-27; Fig. 16. Ex. 1013, 2nd Erdman Decl., ¶¶ 17-19, 28 .

3. Claim 25

As an additional basis, or alternatively if the Board determines that the claim is not anticipated by the Walker patent, claim 25 is obvious over the Walker patent in view of the Buechel patent. Specifically, if the Board finds that the structure corresponding to the means limitation in claim 25 is a dovetail joint (and its equivalents), then claim 25 would have been rendered obvious by the Walker patent in view of the Buechel patent. Ex. 1013, 2nd Erdman Decl., ¶ 29. The dovetail joint structures shown in the Buechel patent provide the function of preventing separation of the tibial bearing component 117 from the tibial platform 116. *See, e.g.*, Ex. 1012, col. 15, ll.14-32; Fig. 32B. Ex. 1013, 2nd Erdman Decl., ¶¶ 17-19. Moreover, for the reasons discussed above in connection with claim 23,

it would have been obvious to a person of ordinary skill in the art to substitute the dovetail joint structures of the Buechel patent for the abutment and recess of the Walker patent. Ex. 1013, 2nd Erdman Decl., ¶¶ 17-19, 27, 29. A claim chart mapping the features of the Buechel patent to claim 25 is provided below.

Claim 25	Buechel Patent (Ex. 1012)
25. The device of claim 15, further including means associated with said protrusion to prevent a separation of said base sliding side and said movable sliding side.	The projecting dovetail surface 144 from the tibial bearing component 117 engages the mating dovetail track of the tibial platform component 116. This engagement constrains the movement of the components and prevents the separation of the base sliding side of the tibial platform component and the movable sliding side of the bearing component. *See, e.g.*, col. 15, ll. 14-32; Fig. 32B. Ex. 1013, 2nd Erdman Decl., ¶¶ 17-19, 27, 29.

VIII. CONCLUSION

For the foregoing reasons, Petitioners respectfully request the grant of this Petition and cancellation of claims 23-25 of the Bonutti patent.

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.105 and 42.6(e), I hereby certify that I caused a true and correct copy of the foregoing petition for *inter partes* review and associated exhibits to be served on June 30, 2014, via Federal Express Priority Overnight service and via e-mail, as a PDF file attachment, on the following:

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