FISH.
FISH & RICHARDSON

Street Address
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Minneapolis, MN 55440-1022

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March 29, 2022

Attorney Docket No.: 46440-0009017

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Presented for filing is a new continuation patent application for prioritized examination of:

Inventor(s): AHMNON D. MOSKOWITZ, PABLO A. VALDIVIA Y. ALVARADO, MOSHEH T. MOSKOWITZ AND NATHAN C. MOSKOWITZ

Title: BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION

Enclosed are the following papers, including those required to receive a filing date under 37 CFR 1.53(b):

	Pages
Specification	27
Claims	4
Abstract	1
Declaration	4
Drawing(s)	38

Enclosures:

- Application Data Sheet, 10 pages.
- Power of Attorney, 2 pages.
- Certification and Request for Prioritized Examination (Track One), 2 pages

The applicant claims small entity status under 37 CFR § 1.27.

Basic Filing Fee	$80
Search Fee	$350
Examination Fee	$400
Publication fee	$0

Track One processing fee			$70
Track One prioritized examination fee			$2100
Total Claims 0	over 20	**0 x $50**	$0
Independent Claims 0	over 3	**0 x $240**	$0
Fee for Multiple Dependent claims			$0
Application size fee for each 50 pages over 100 Total Sheets: 70 x .75 - 100/50 = 0 x			$0
Total Filing fee			$3000

I hereby authorize the USPTO to communicate in response to email communications from the undersigned and practitioners under Customer No. 26191 in accordance with 37 CFR § 1.33 and 37 CFR § 1.34 concerning any subject matter of this application via email. I understand that a copy of these communications will be made of record in the application file. (MPEP 502.03).

If this application is considered to be incomplete, or if a telephone conference would otherwise be helpful, call the undersigned at +1 (612) 766-2015.

Send all correspondence to:

26191
Customer Number

Respectfully submitted,

/Kiersten M. Batzli/

Kiersten M. Batzli
Registration No. 75,476

Enclosures

KXZ/euw
62926177.doc

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	46440-0009017
	Application Number	
Title of Invention	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Ahmnon	D.	Moskowitz	

Residence Information (Select One) • US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
Rockville	MD	US

Mailing Address of Inventor:

Address 1	212 North Adams St.
Address 2	
City	Rockville
State/Province	MD
Postal Code	20850
Country	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Pablo	A. Valdivia Y.	Alvarado	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
Cambridge	MA	US

Mailing Address of Inventor:

Address 1	13 Lancaster St. #2
Address 2	
City	Cambridge
State/Province	MA
Postal Code	02139
Country	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Mosheh	T.	Moskowitz	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

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City	Rockville	State/Province	MD	Country of Residence	US

Mailing Address of Inventor:

Address 1	212 North Adams Street
Address 2	

City	Rockville	State/Province	MD
Postal Code	20850	Country	US

Inventor 4 — Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Nathan	C.	Moskowitz	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Rockville	State/Province	MD	Country of Residence	US

Mailing Address of Inventor:

Address 1	212 North Adams Street
Address 2	

City	Rockville	State/Province	MD
Postal Code	20850	Country	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	26191		
Email Address	apsi@fr.com	Add Email	Remove Email

Application Information:

Title of the Invention	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION		
Attorney Docket Number	46440-0009017	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	38	Suggested Figure for Publication (if any)	

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Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information **should** be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	26191		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	16/744755	2020-01-16

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	46440-0009017
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Title of Invention	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION	

Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16/744755	Continuation of	15944117	2018-04-03	10537442	2020-01-21
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15944117	Continuation of	15894471	2018-02-12	10390969	2019-08-27
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15894471	Continuation of	13210157	2011-08-15	9889022	2018-02-13
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13210157	Continuation of	13084543	2011-04-11	8353913	2013-01-15
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13210157	Continuation of	13108982	2011-05-16	9005293	2015-04-14
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13084543	Continuation of	11842855	2007-08-21	7942903	2011-05-17
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13108982	Continuation of	11842855	2007-08-21	7942903	2011-05-17
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
11842855	Continuation in part of	11536815	2006-09-29	7846188	2010-12-07
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
11536815	Continuation in part of	11208644	2005-08-23	7704279	2010-04-27
Prior Application Status	Expired				Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
11208644	Claims benefit of provisional	60670231	2005-04-12		

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	46440-0009017
	Application Number	
Title of Invention	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION	

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	46440-0009017
	Application Number	
Title of Invention	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

● Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	Moskowitz Family LLC		
Mailing Address Information For Applicant:			
Address 1	212 North Adams Street		
Address 2			
City	Rockville	**State/Province**	MD
Country	US	Postal Code	20850
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Kiersten M. Batzli/			Date (YYYY-MM-DD)	2022-03-29
First Name	Kiersten M.	Last Name	Batzli	Registration Number	75,476

Additional Signature may be generated within this form by selecting the Add button. Add

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This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1 The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3 A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

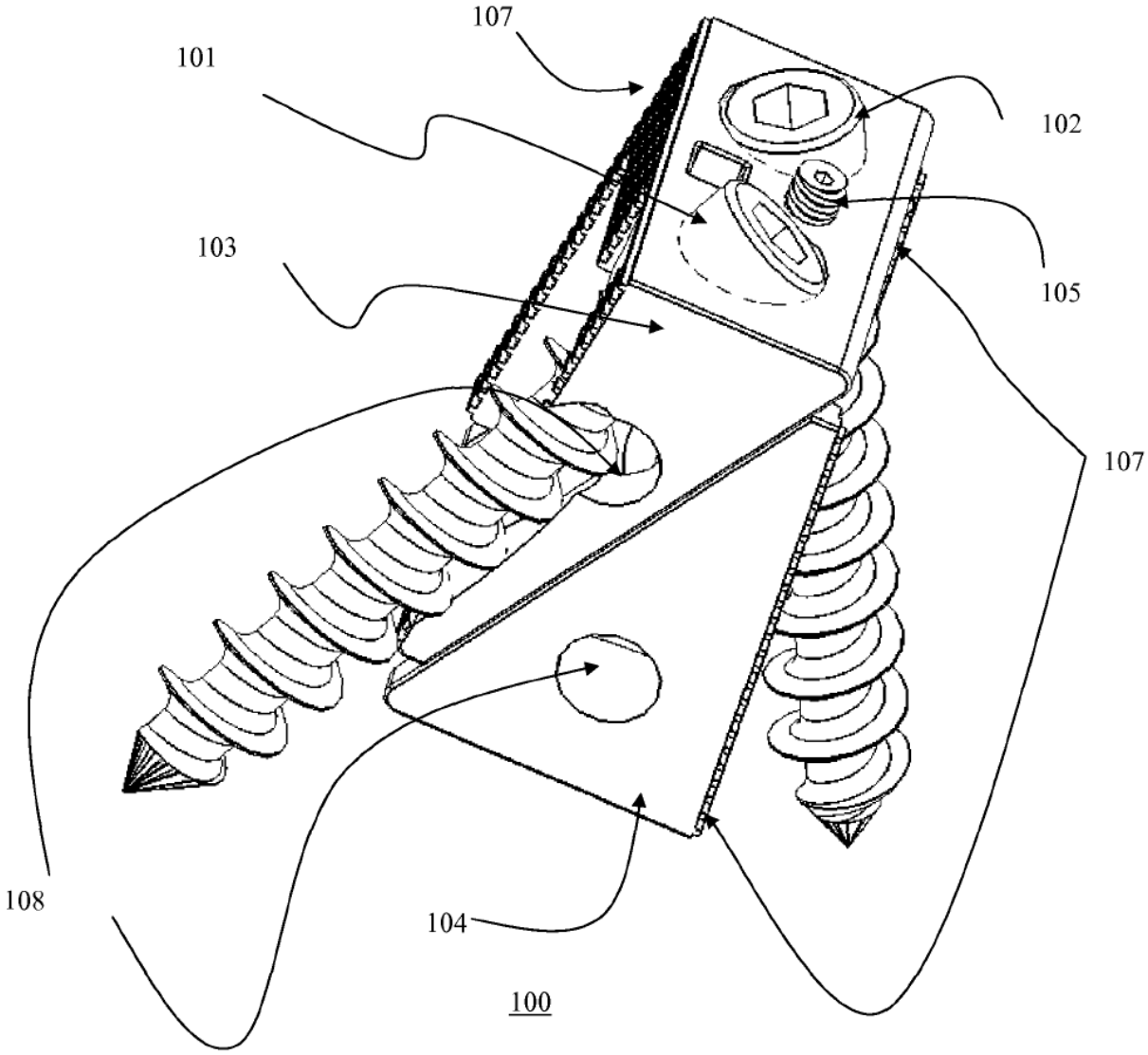


Fig. 1A

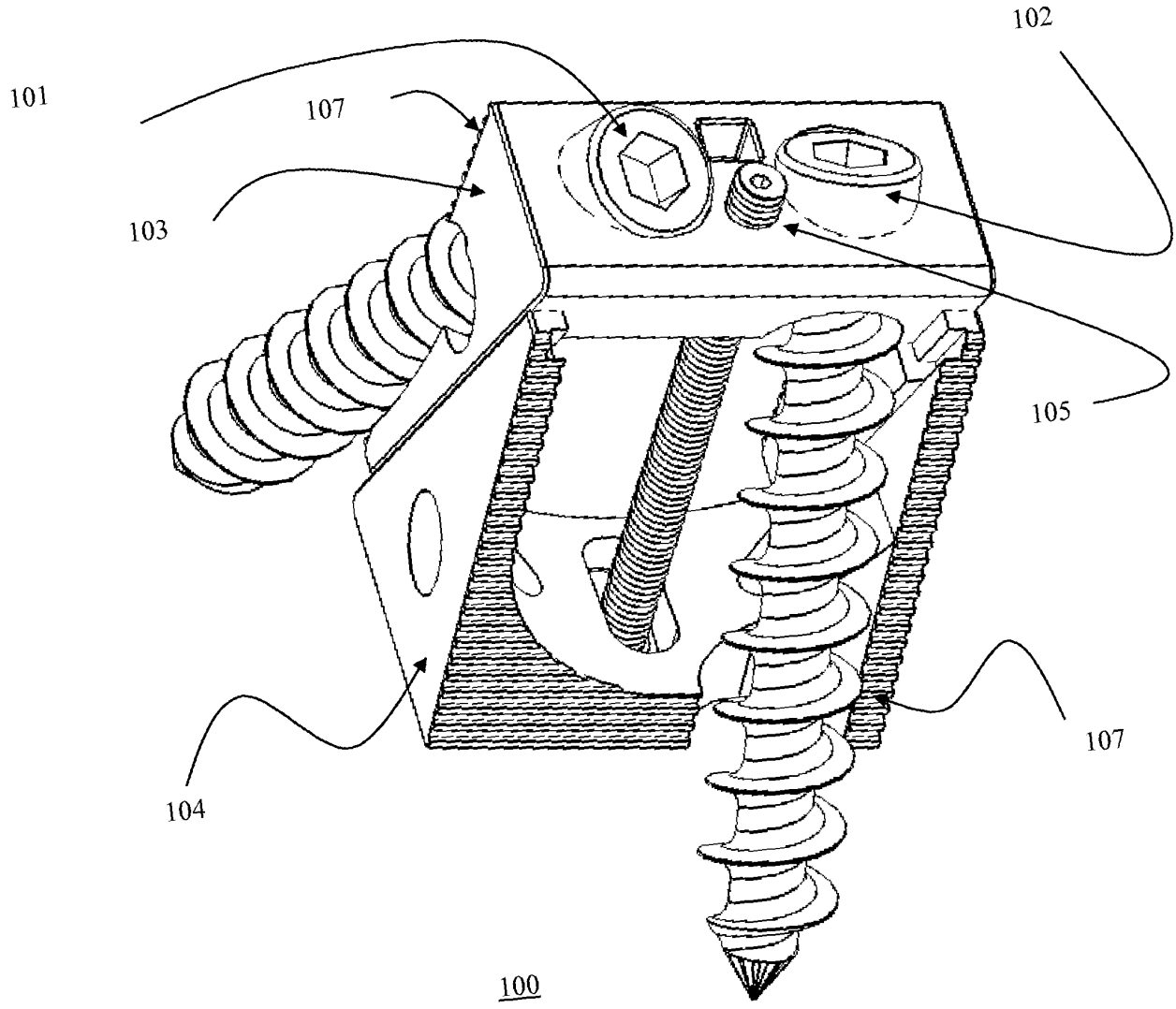


Fig. 1B

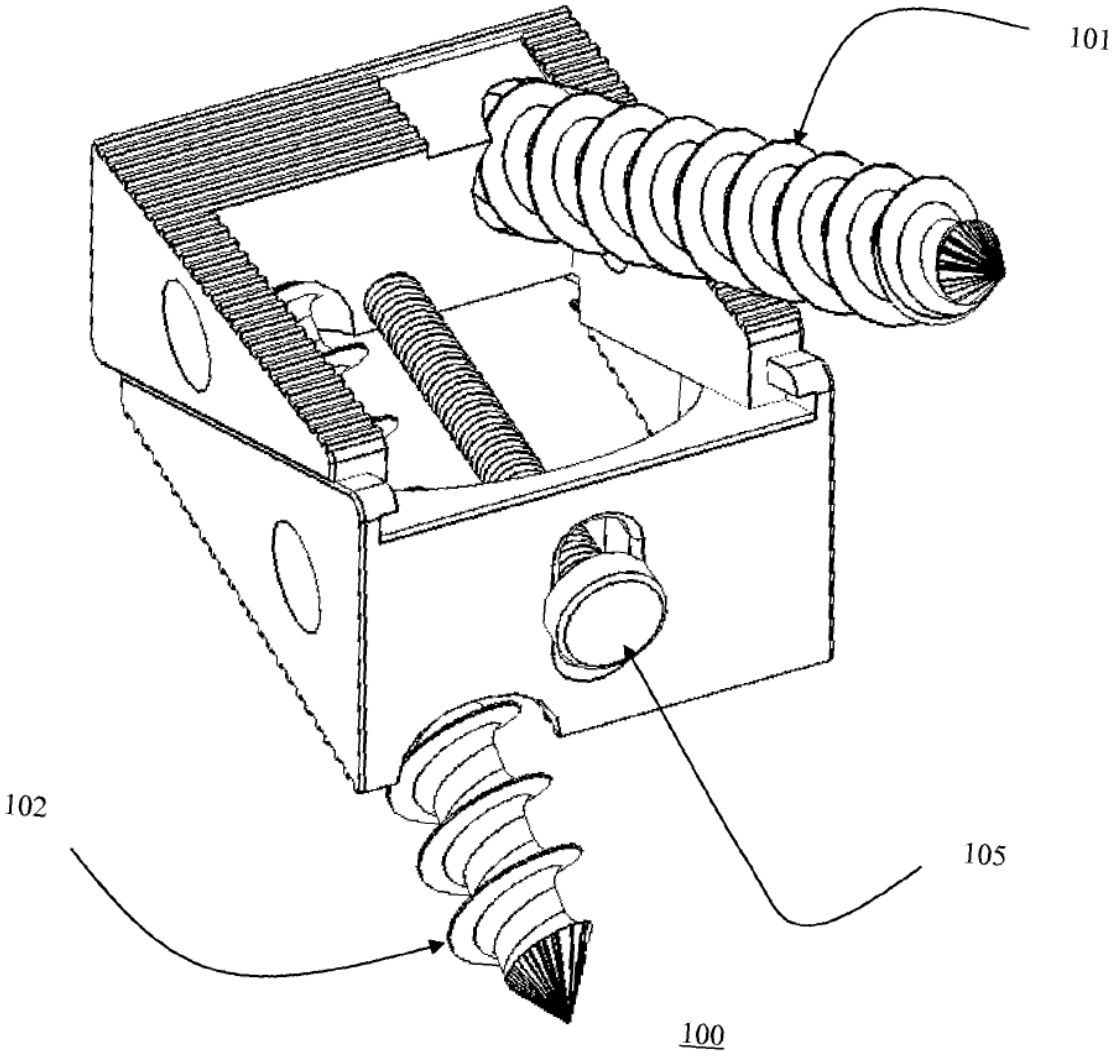


Fig. 1C

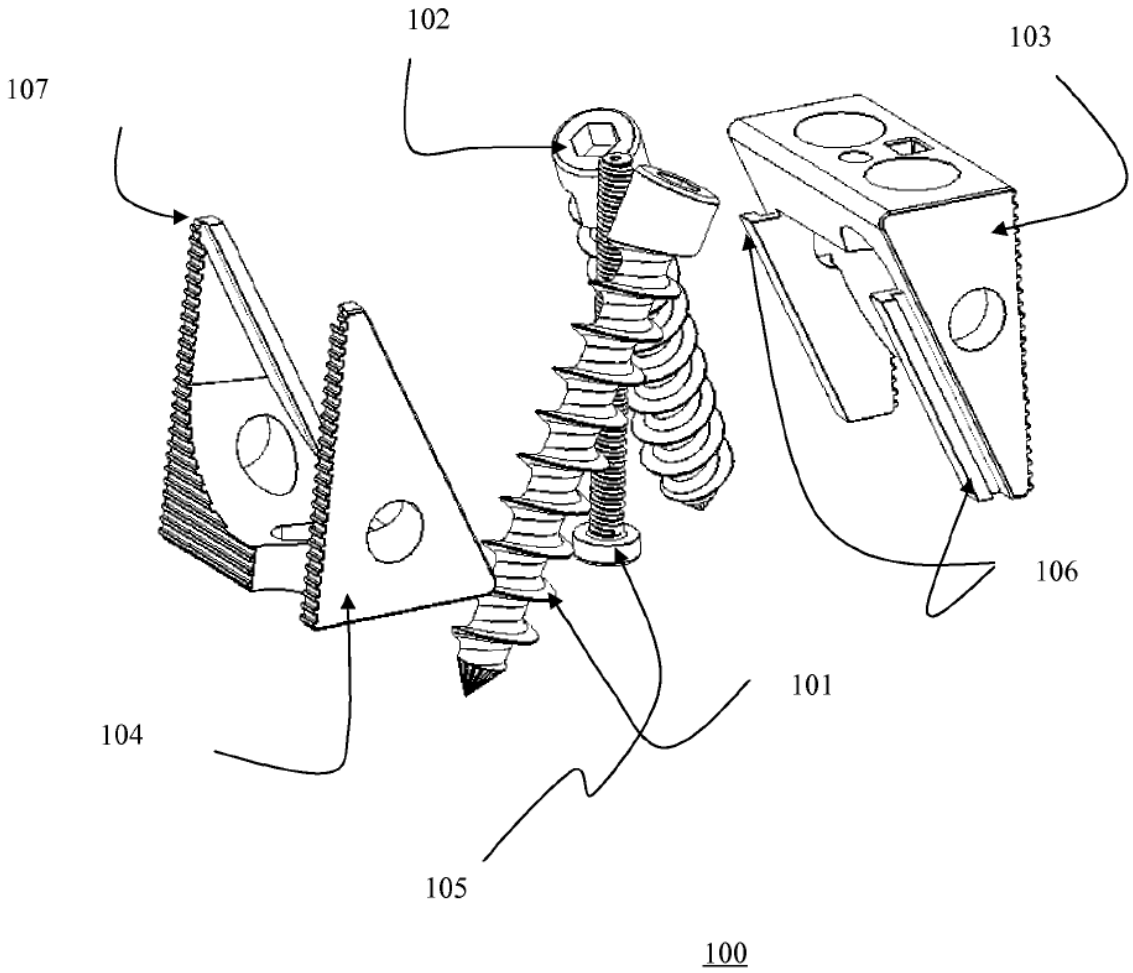


Fig. 1D

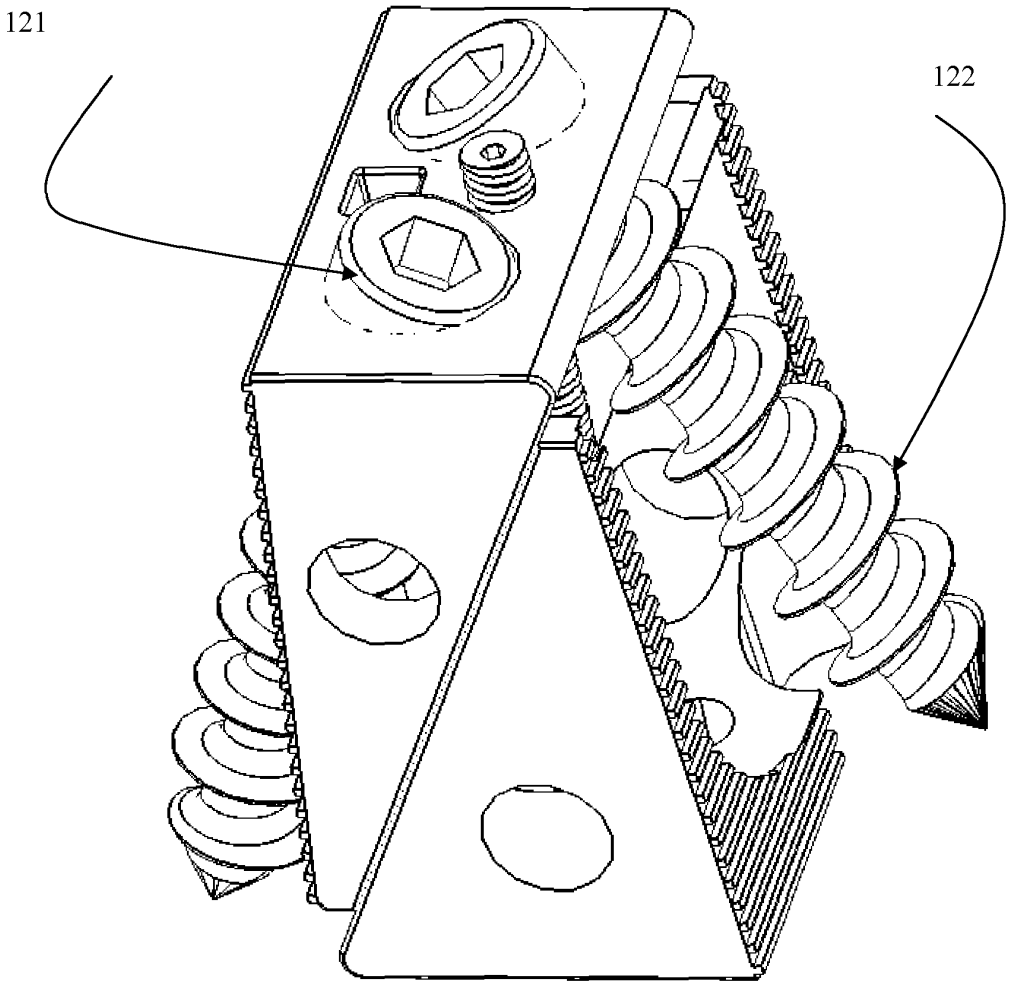


Fig. 1E

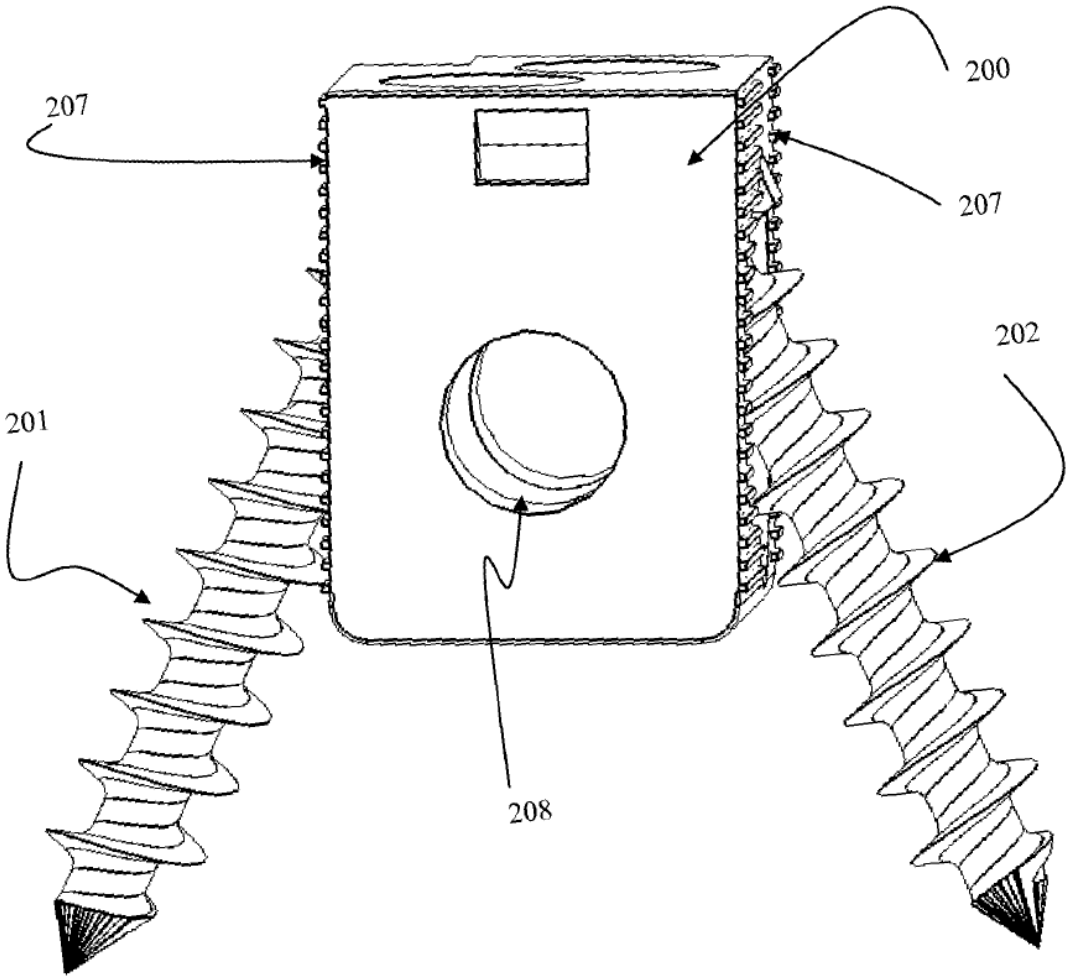


Fig. 2A

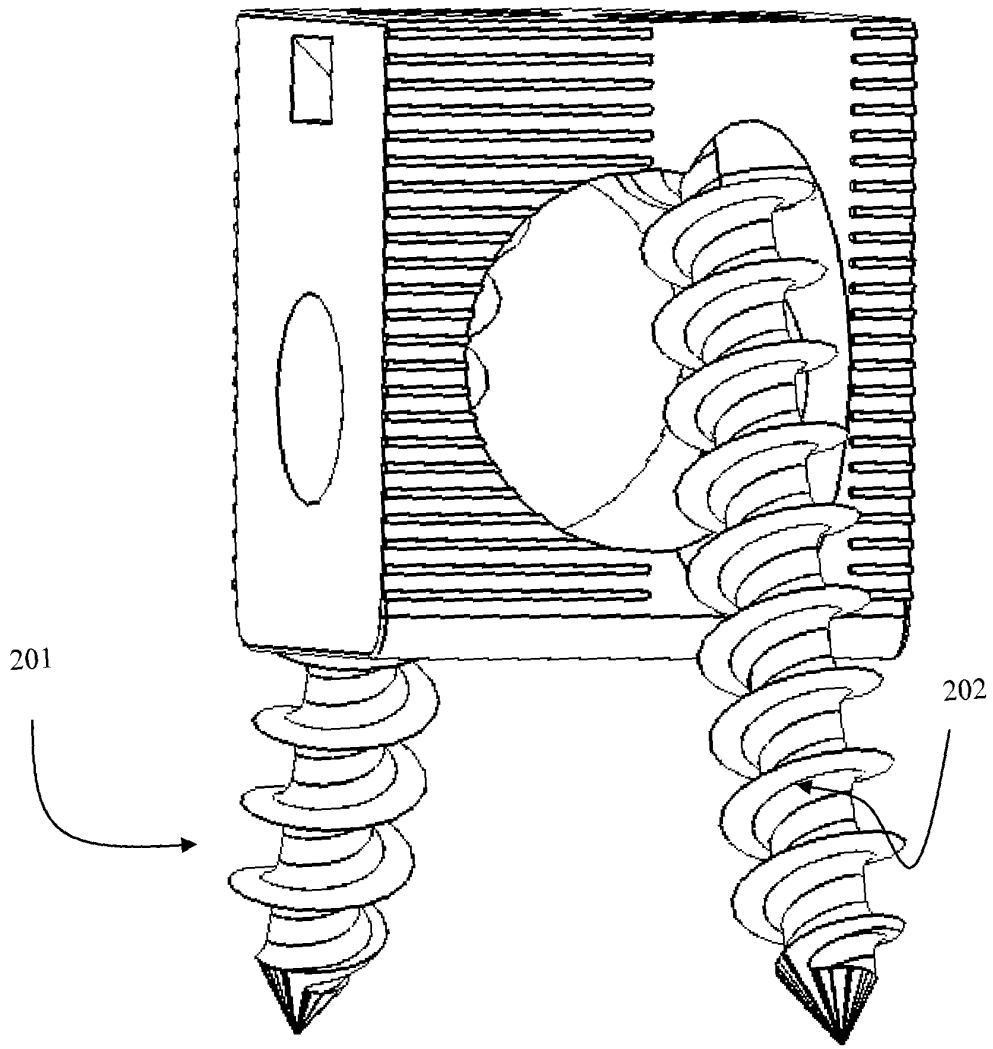


Fig. 2B

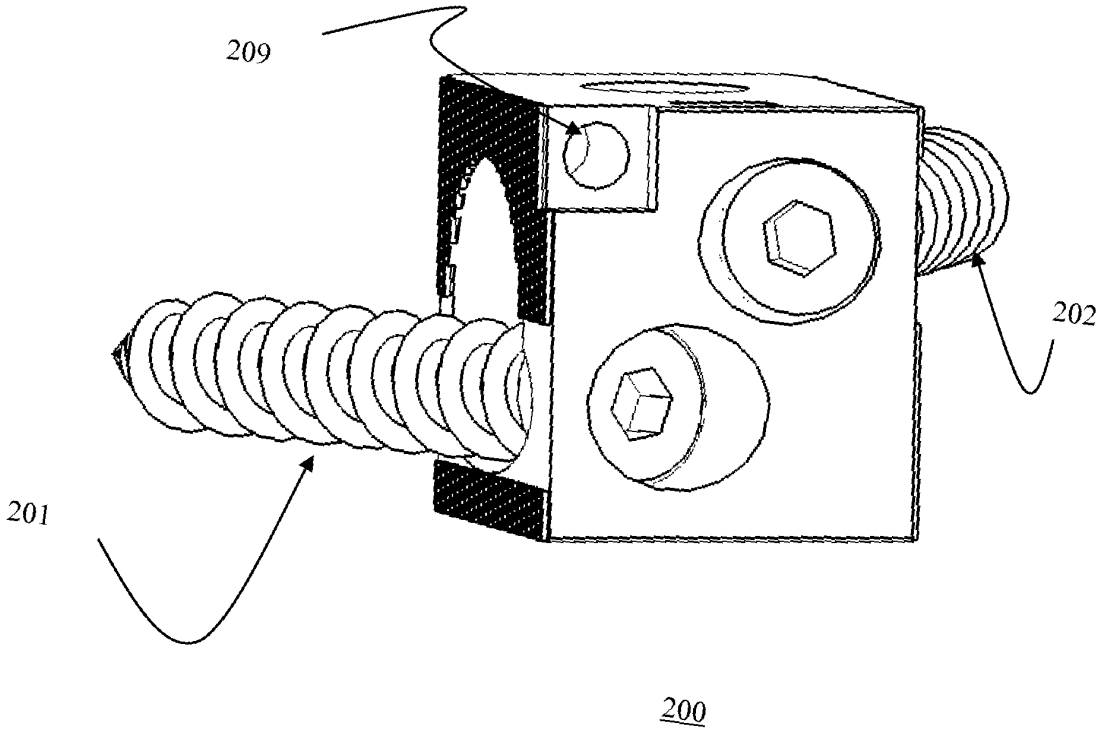


Fig. 2C

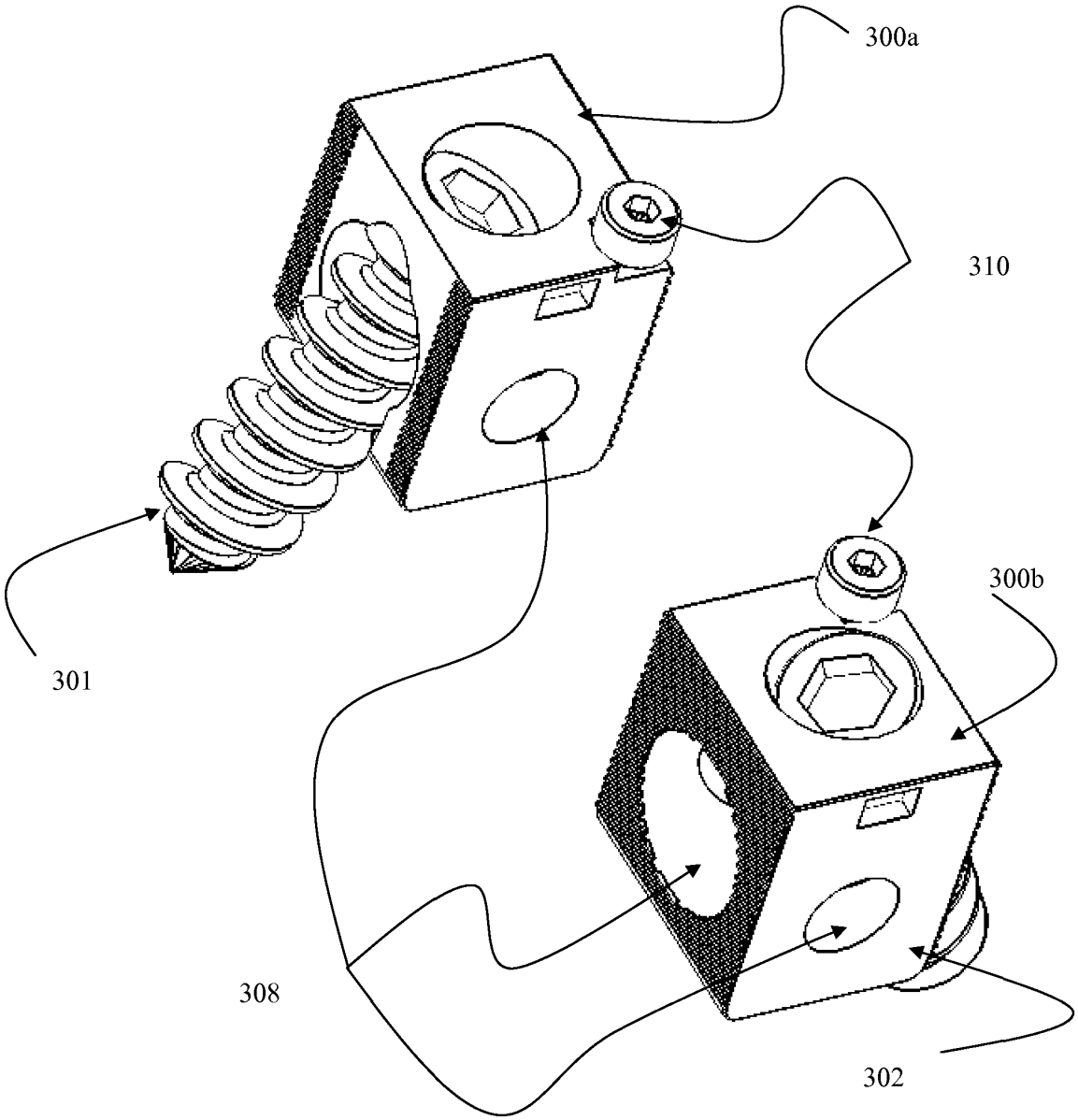


Fig. 3

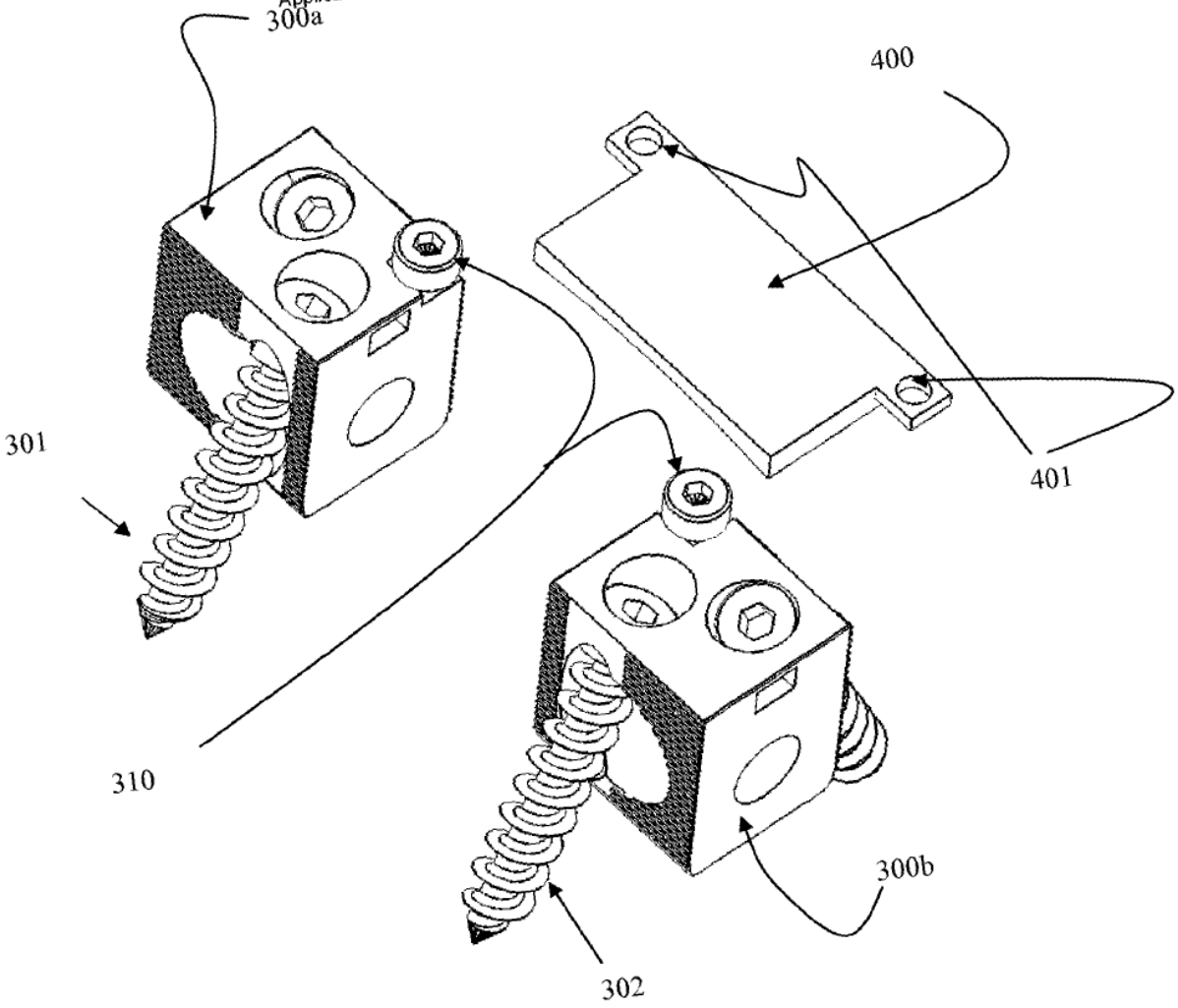


Fig. 4A

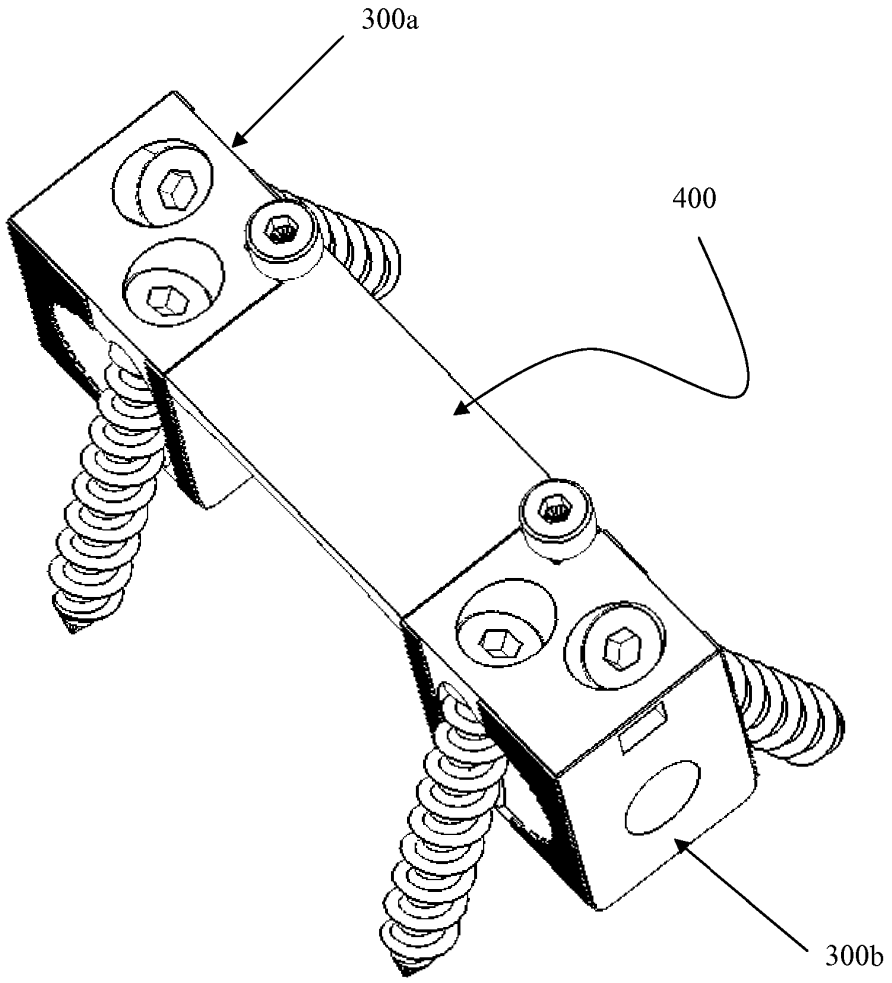


Fig. 4B

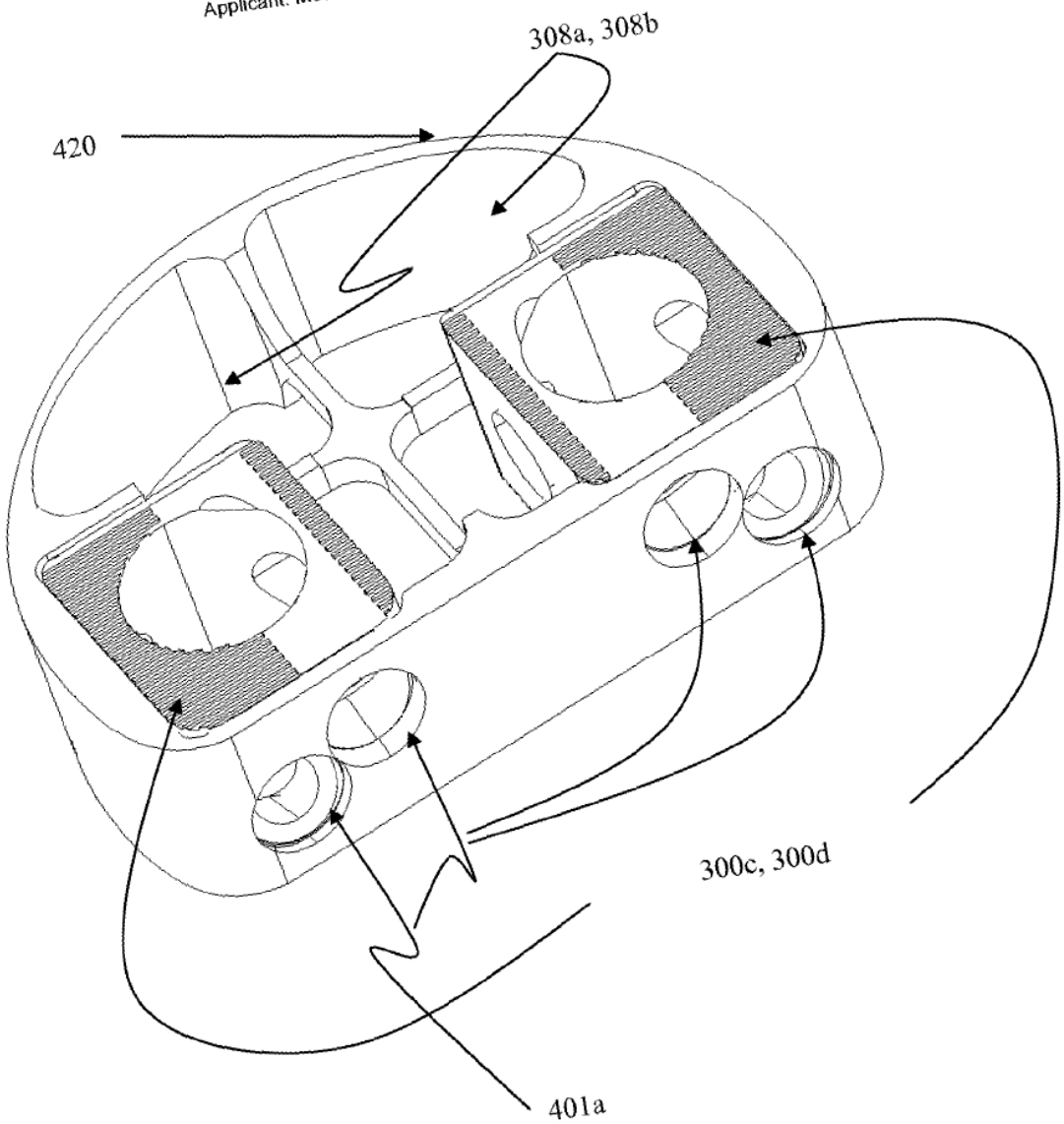


FIG. 4C

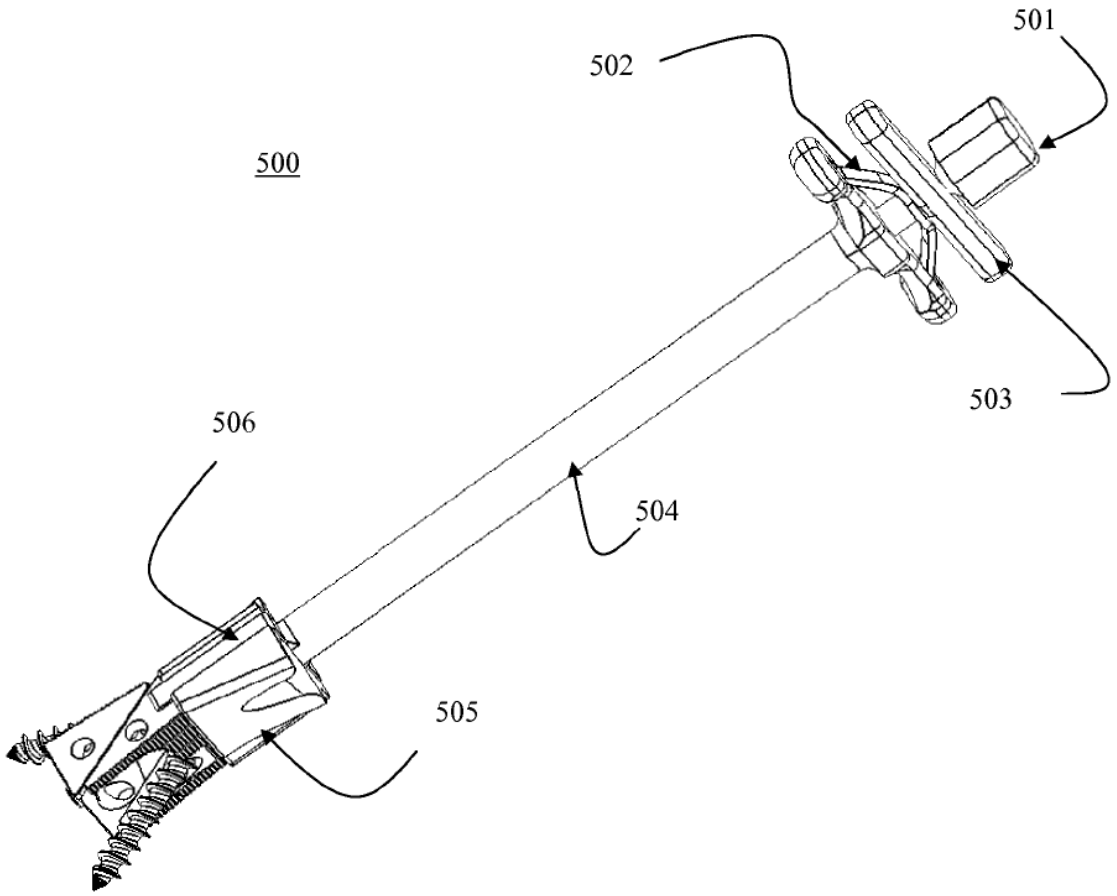


Fig. 5A

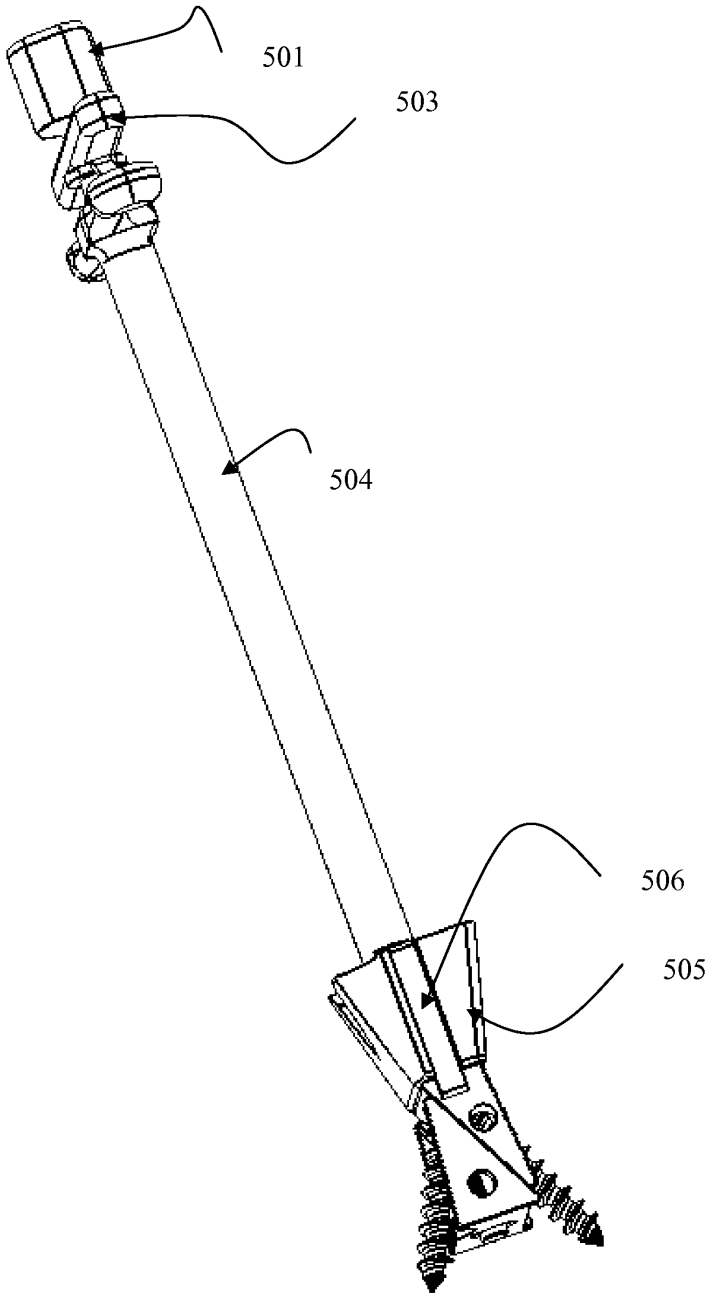


Fig. 5B

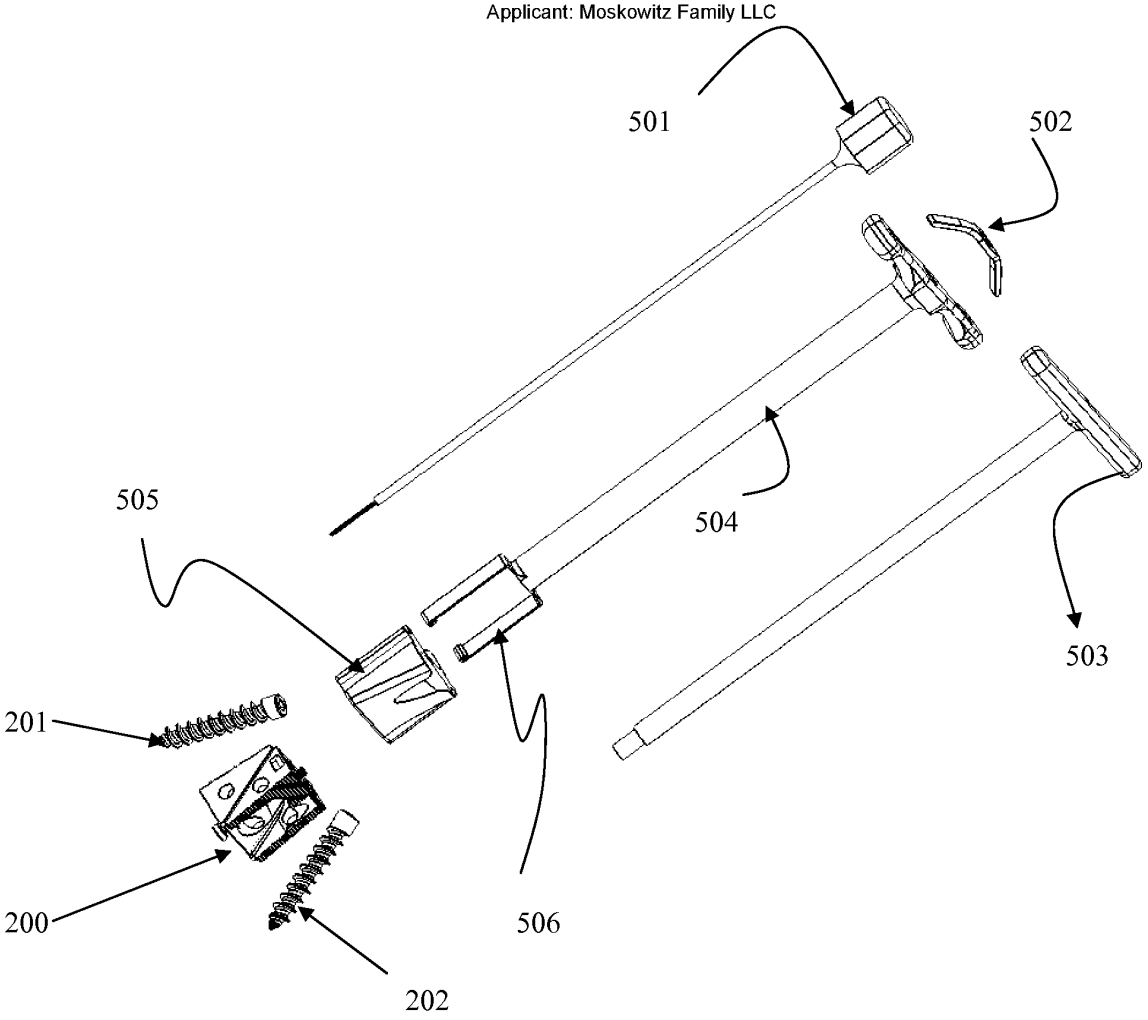


Fig. 5C

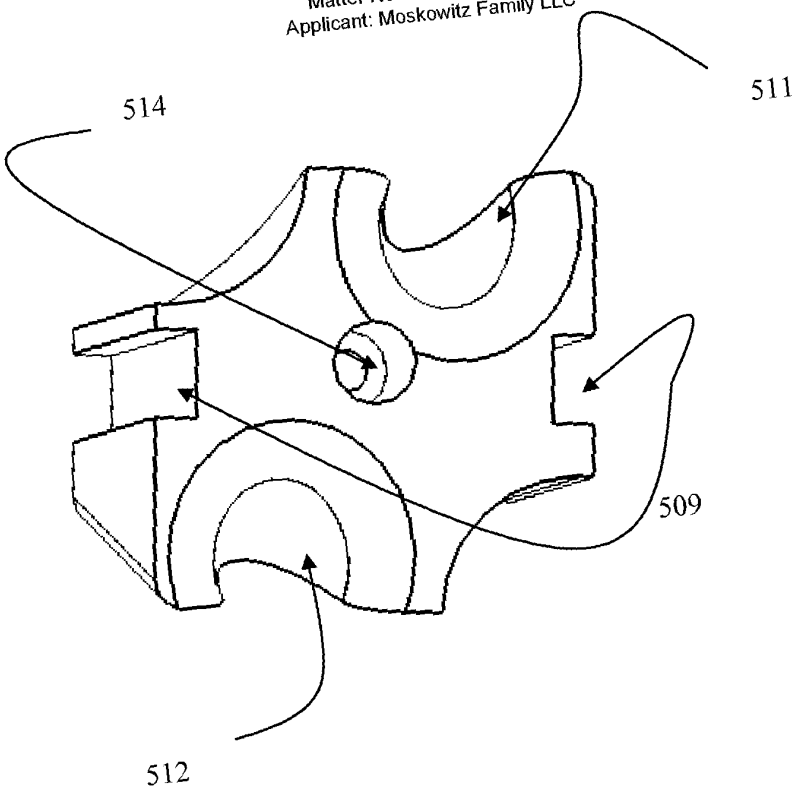


Fig. 5D

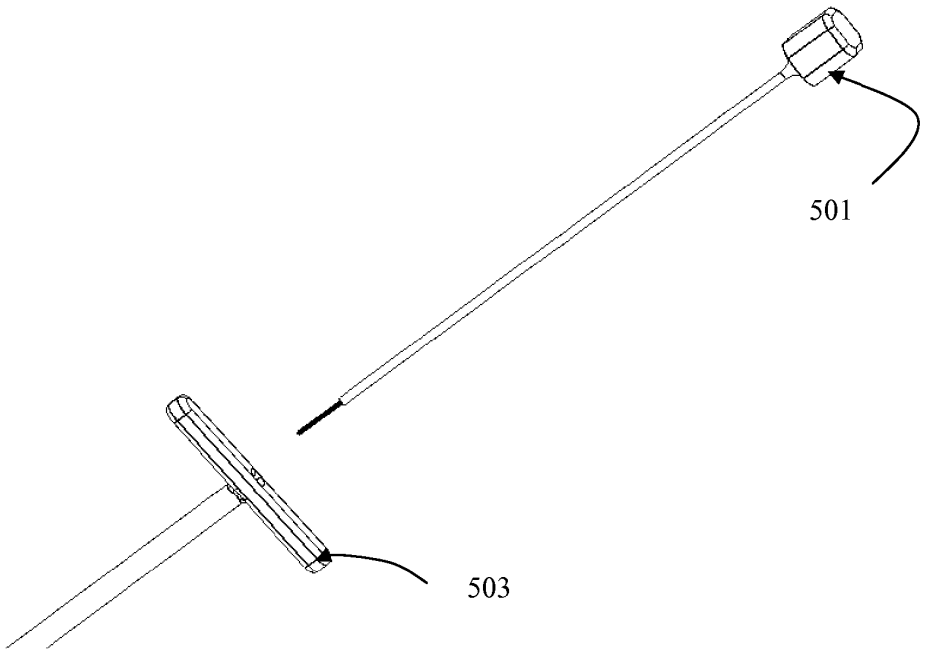


Fig. 5E

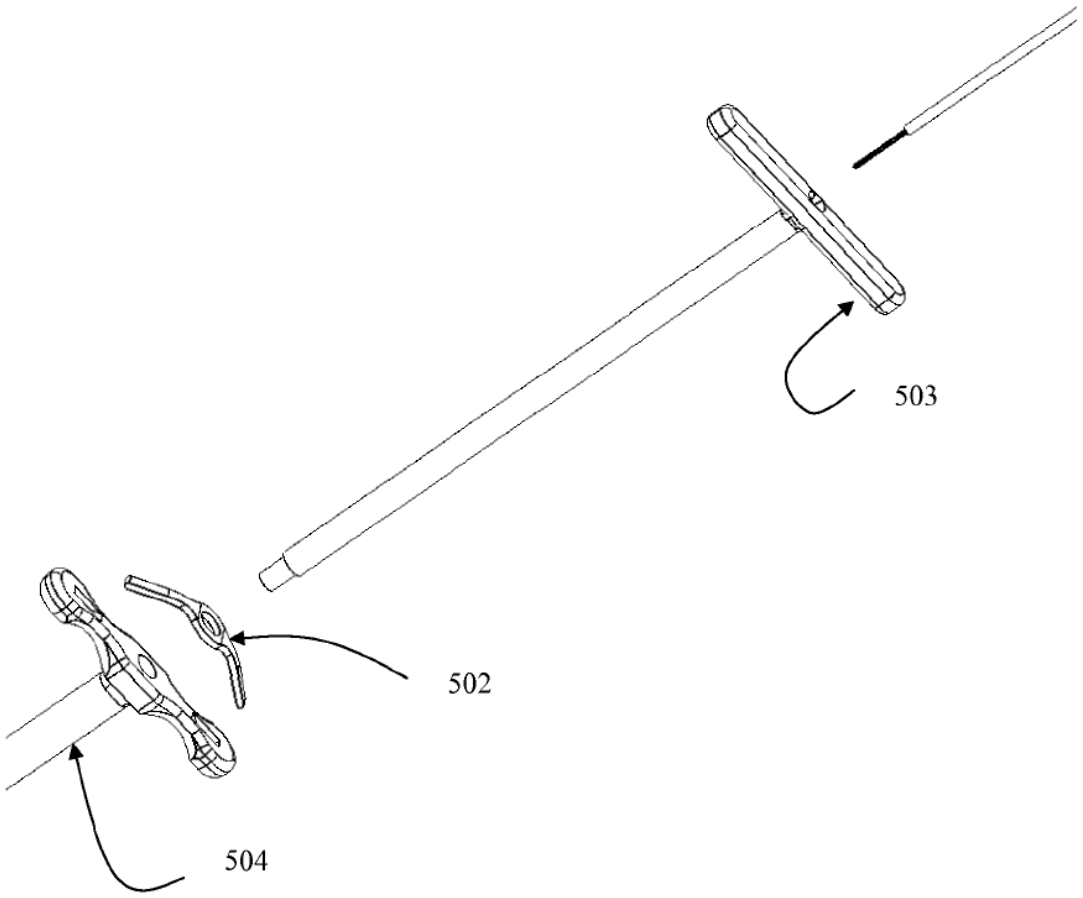


Fig. 5F

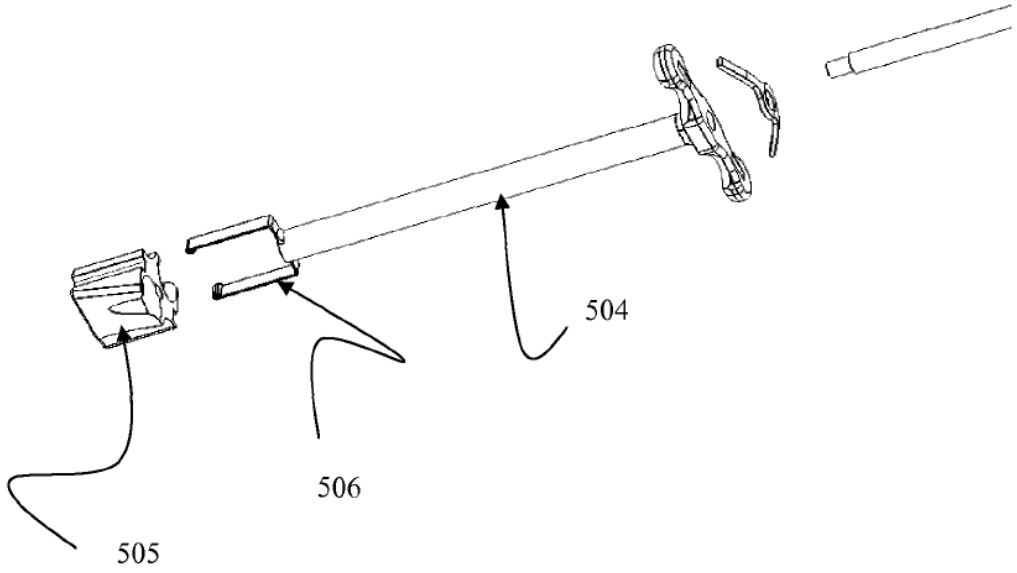


Fig. 5G

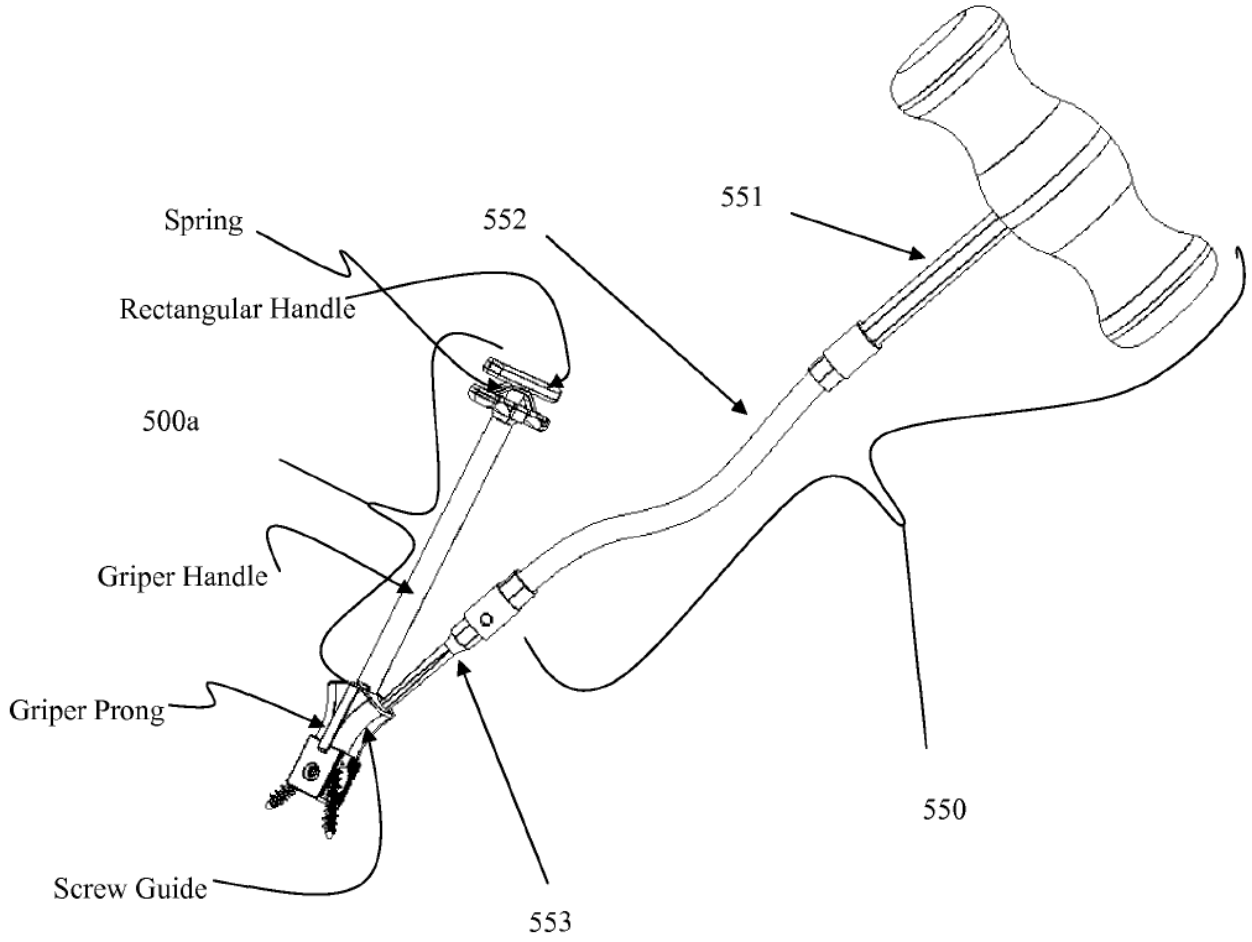

Spring
552
551
Rectangular Handle
500a
Griper Handle
Griper Prong
550
Screw Guide
553

FIG. 5H

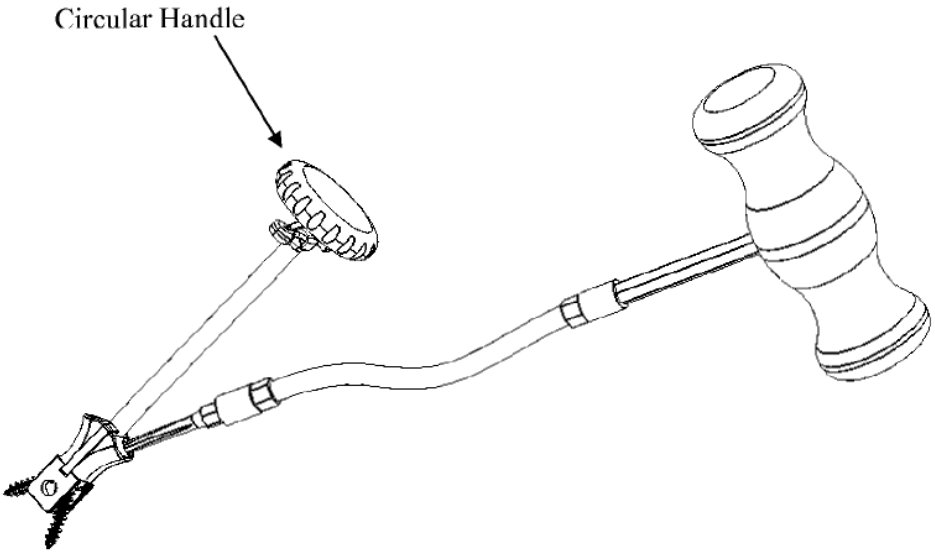


FIG. 5I

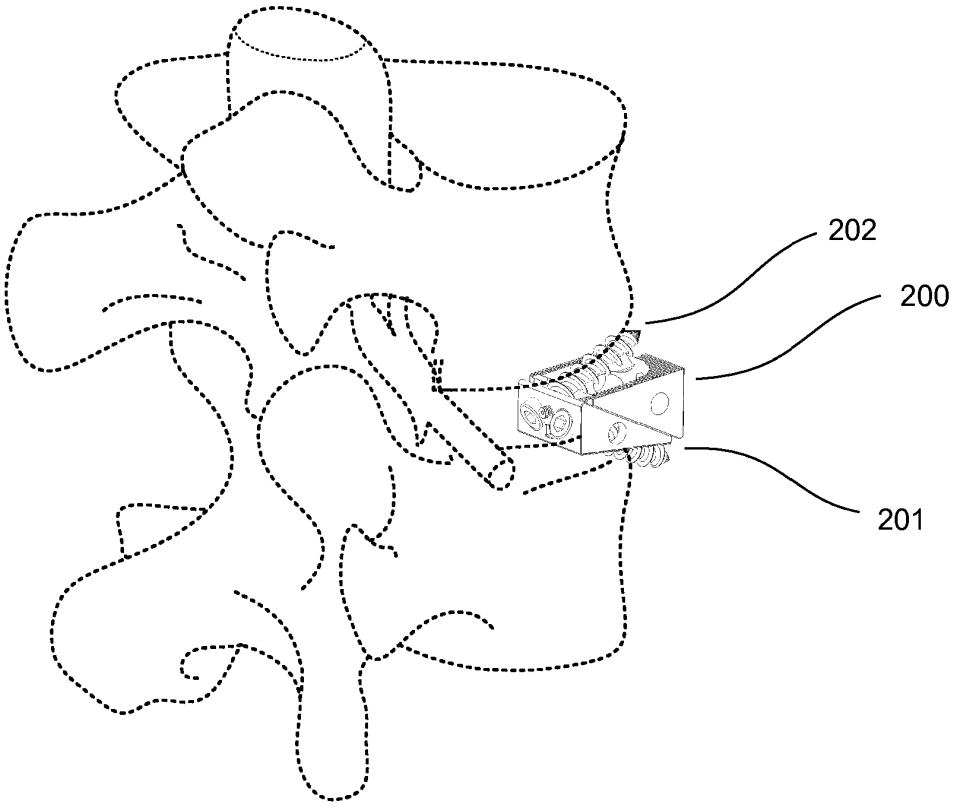


Fig. 6A

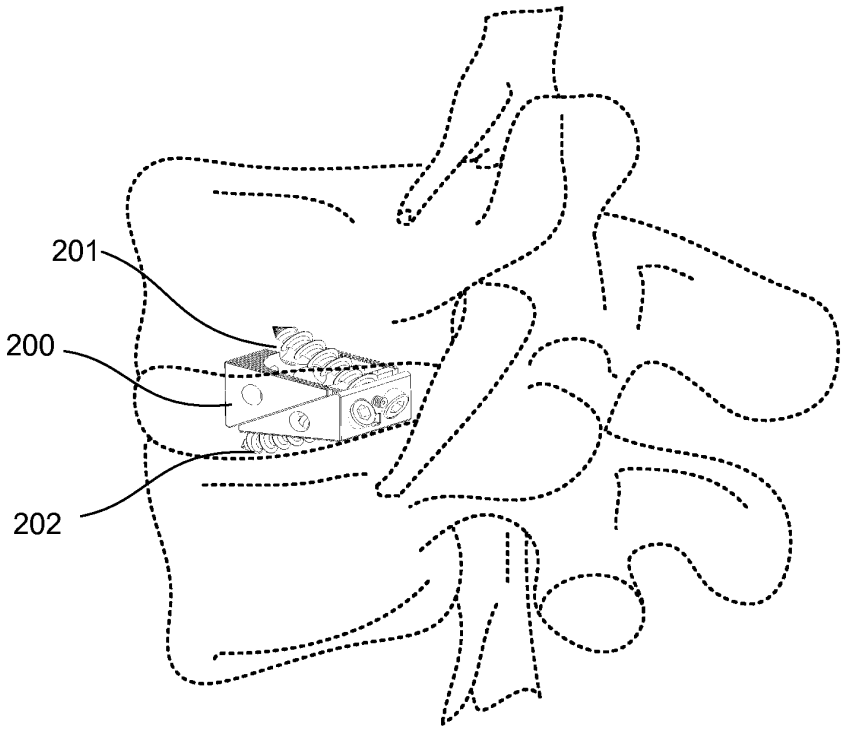


Fig. 6B

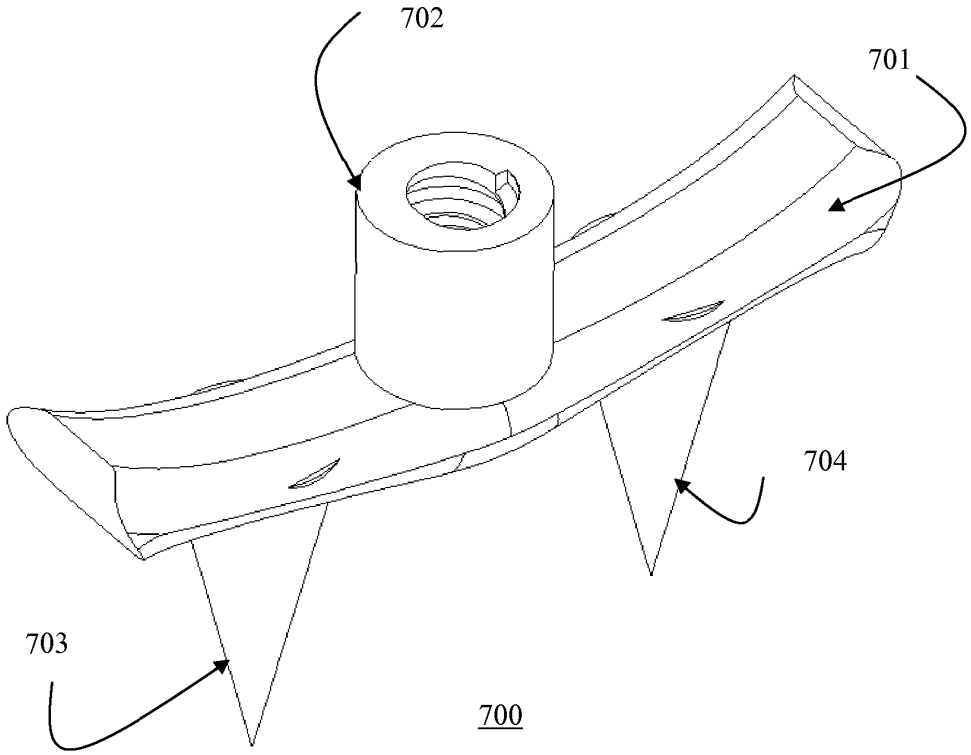
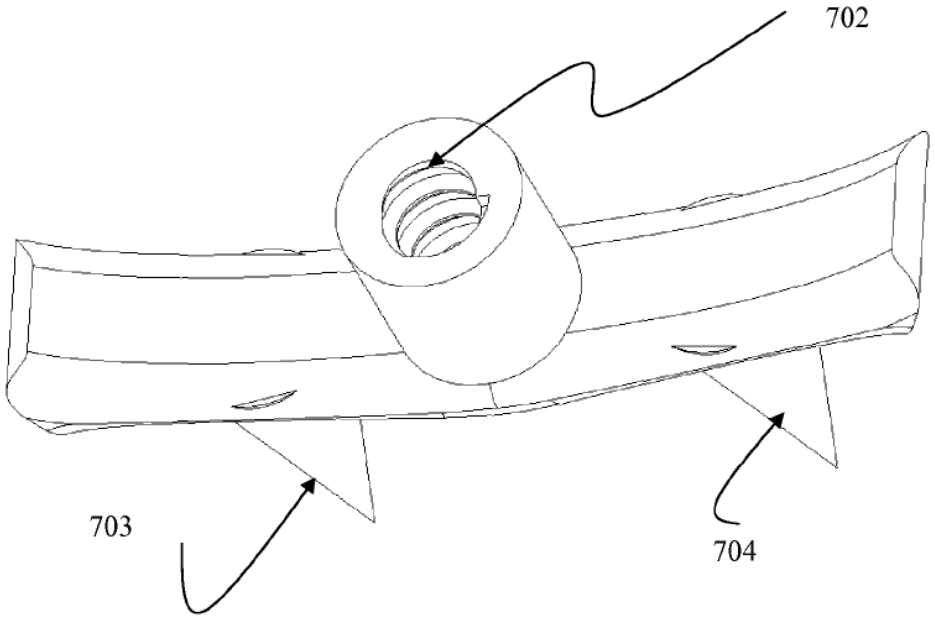


Fig. 7A



700

Fig. 7B

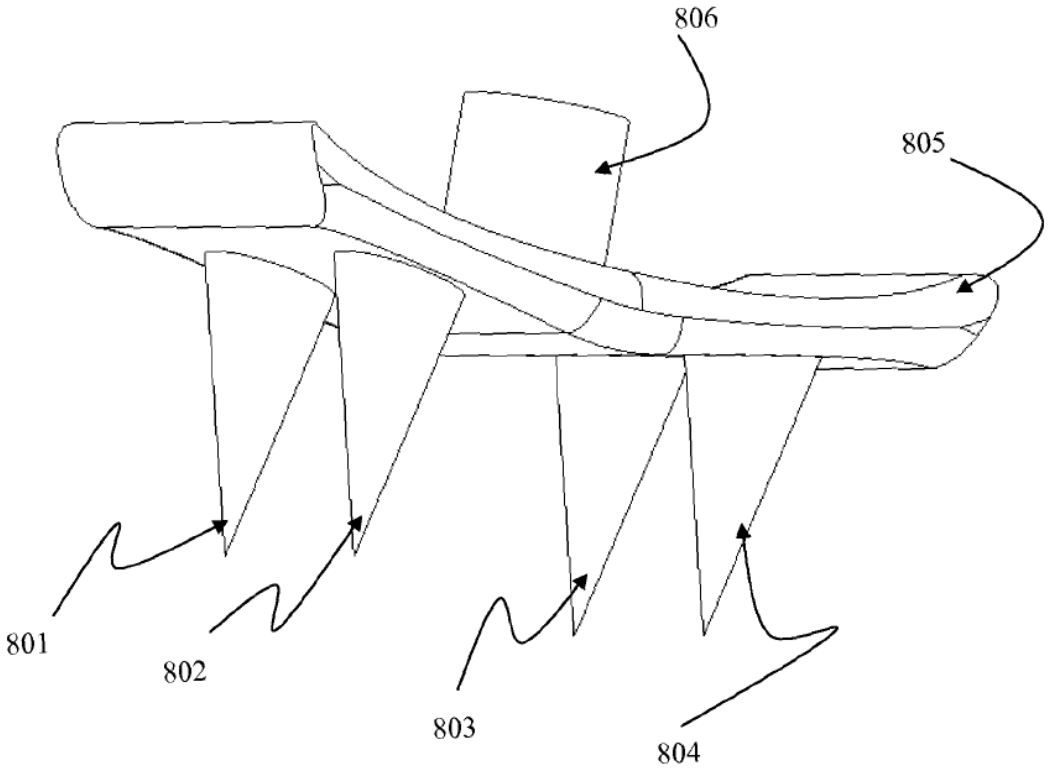


Fig. 8A

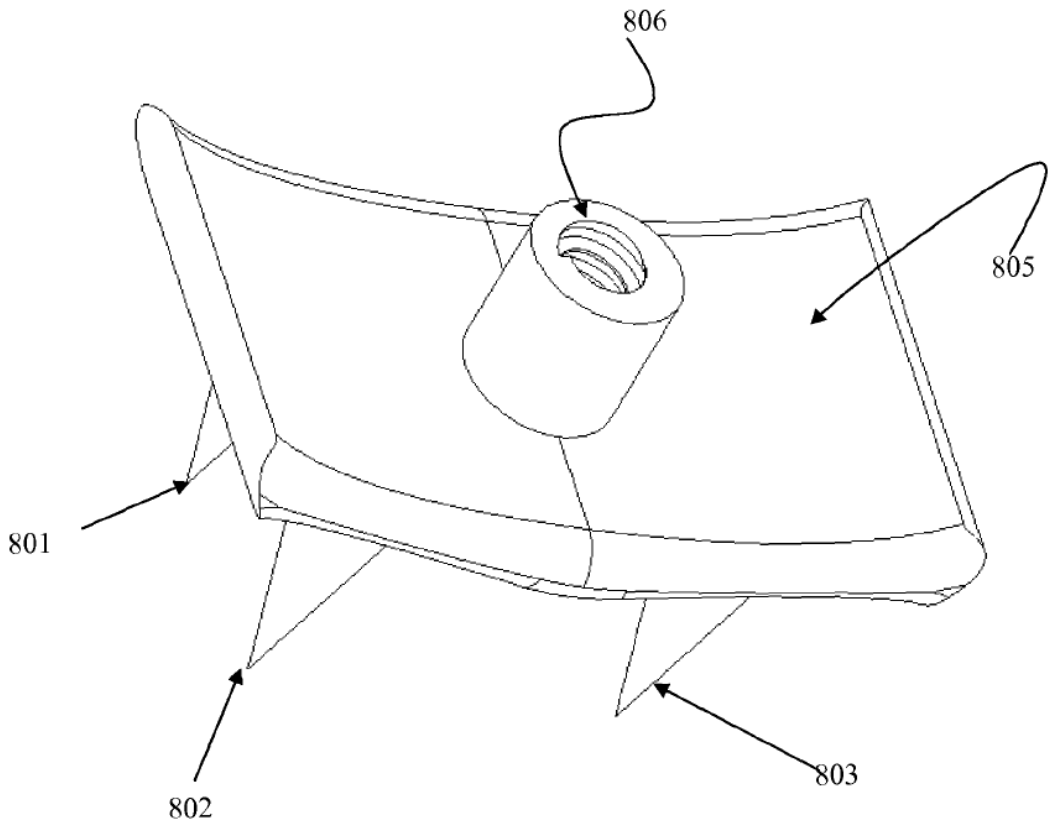


Fig. 8B

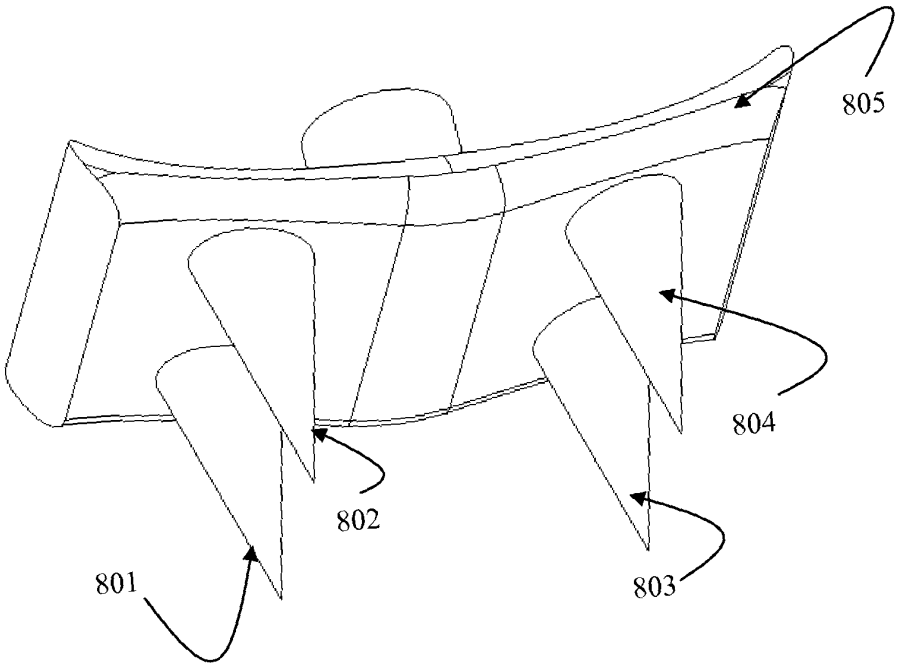


Fig. 8C

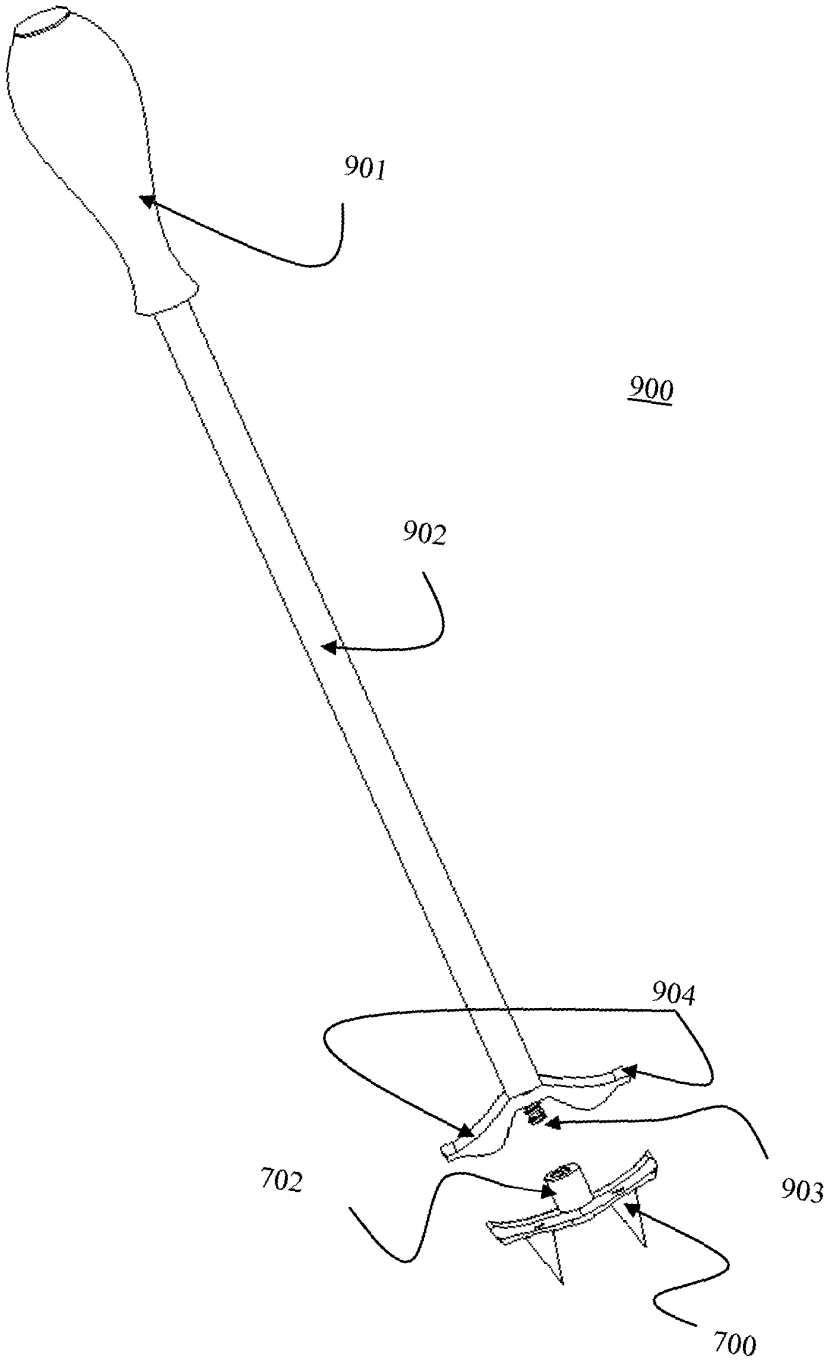


Fig. 9A

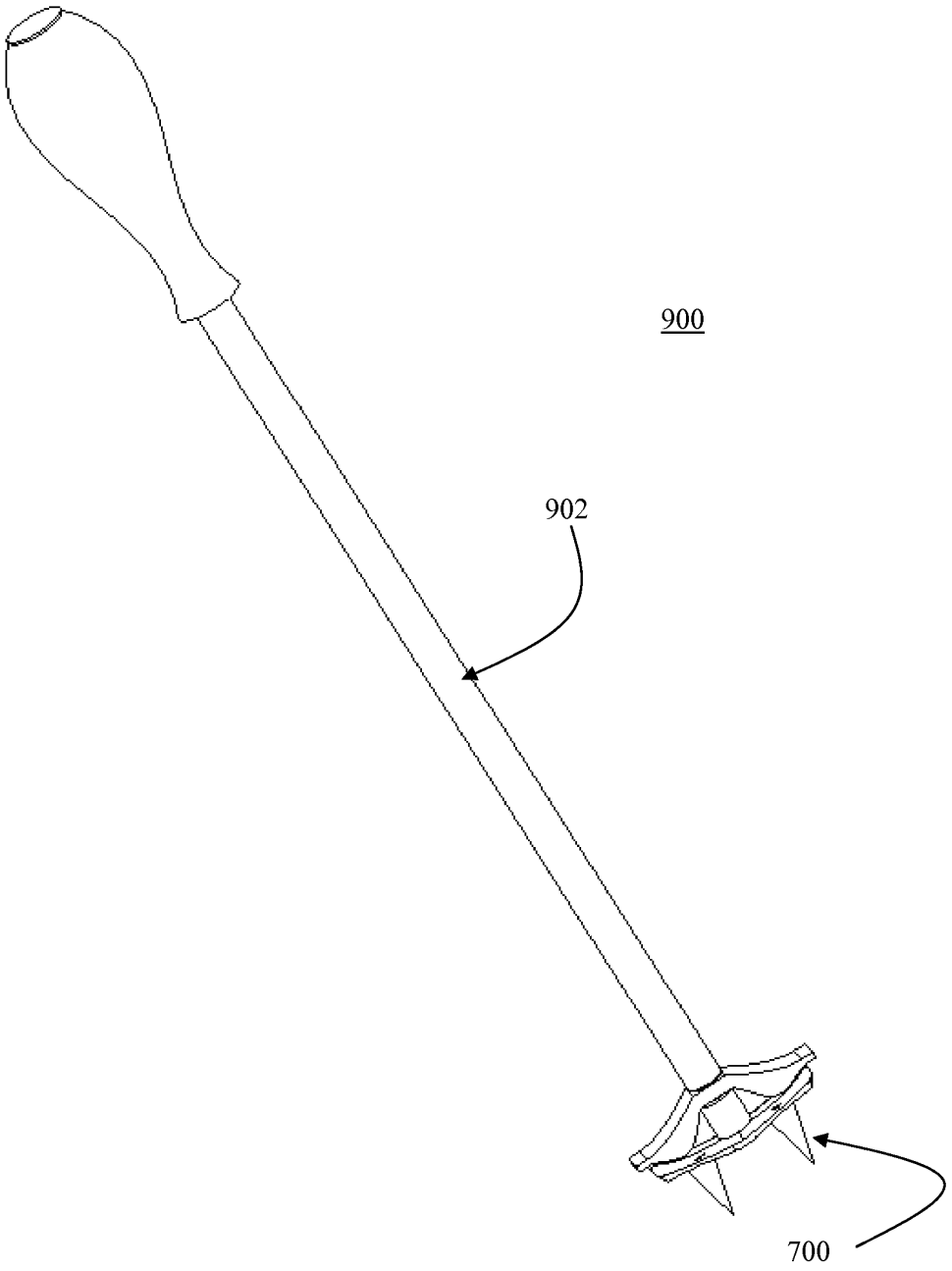


Fig. 9B

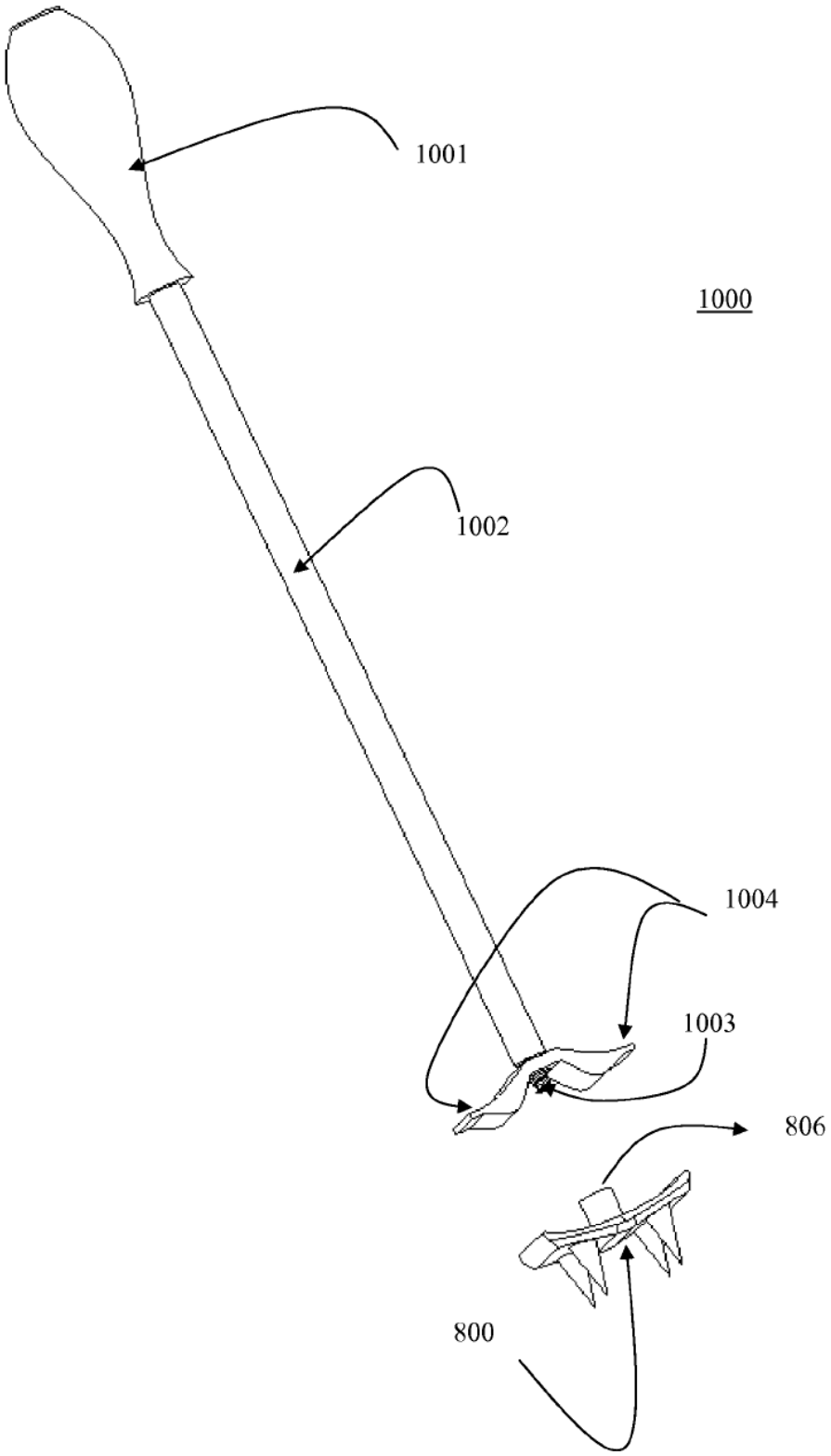


Fig. 10A

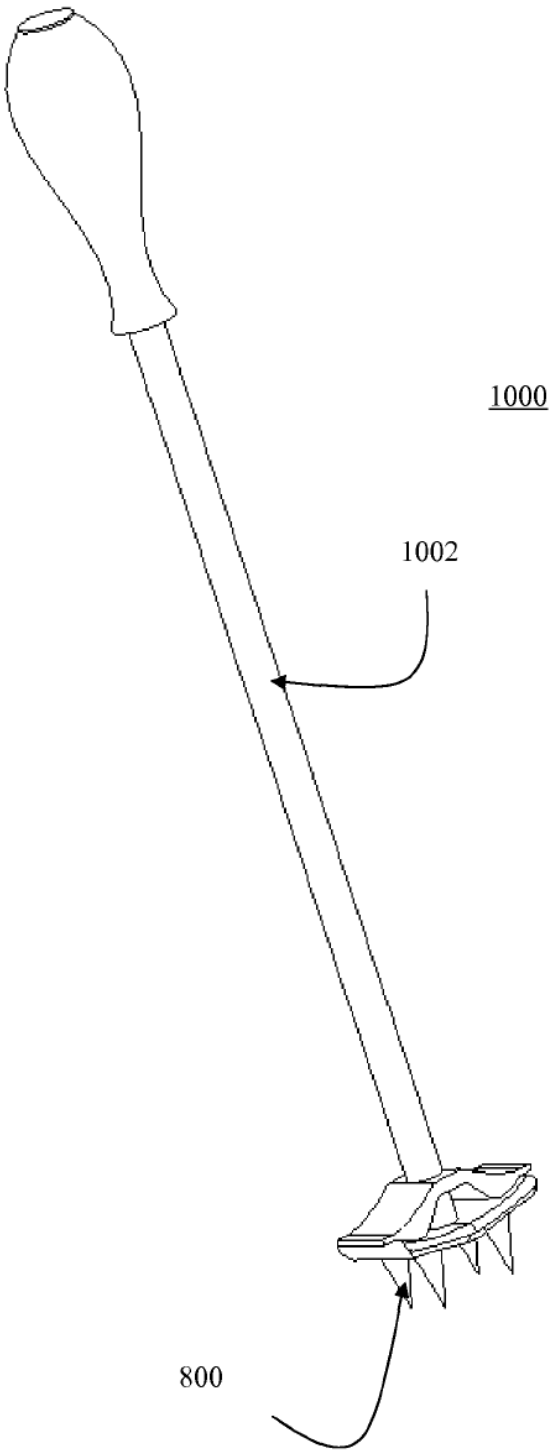


Fig. 10B

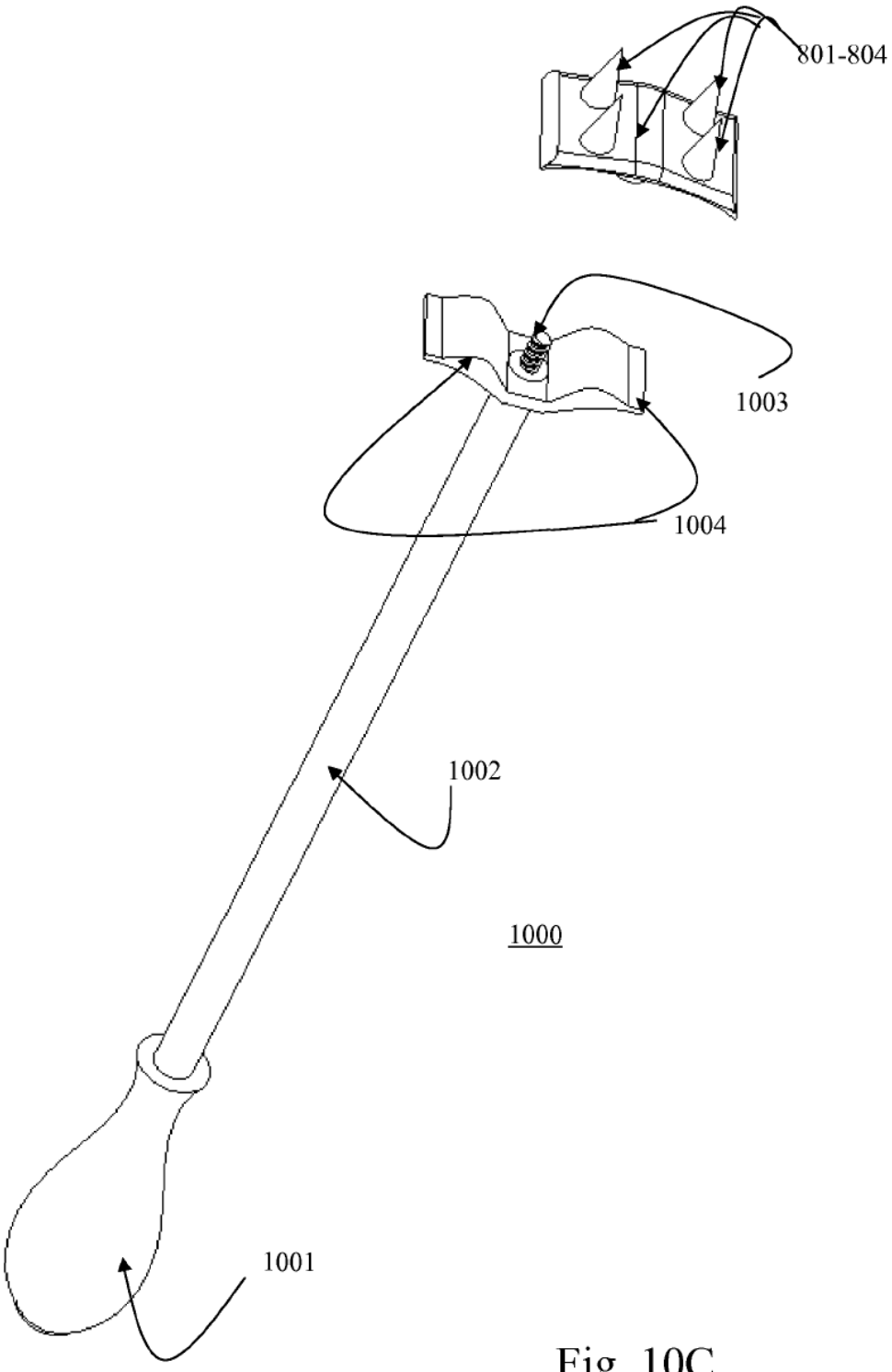


Fig. 10C

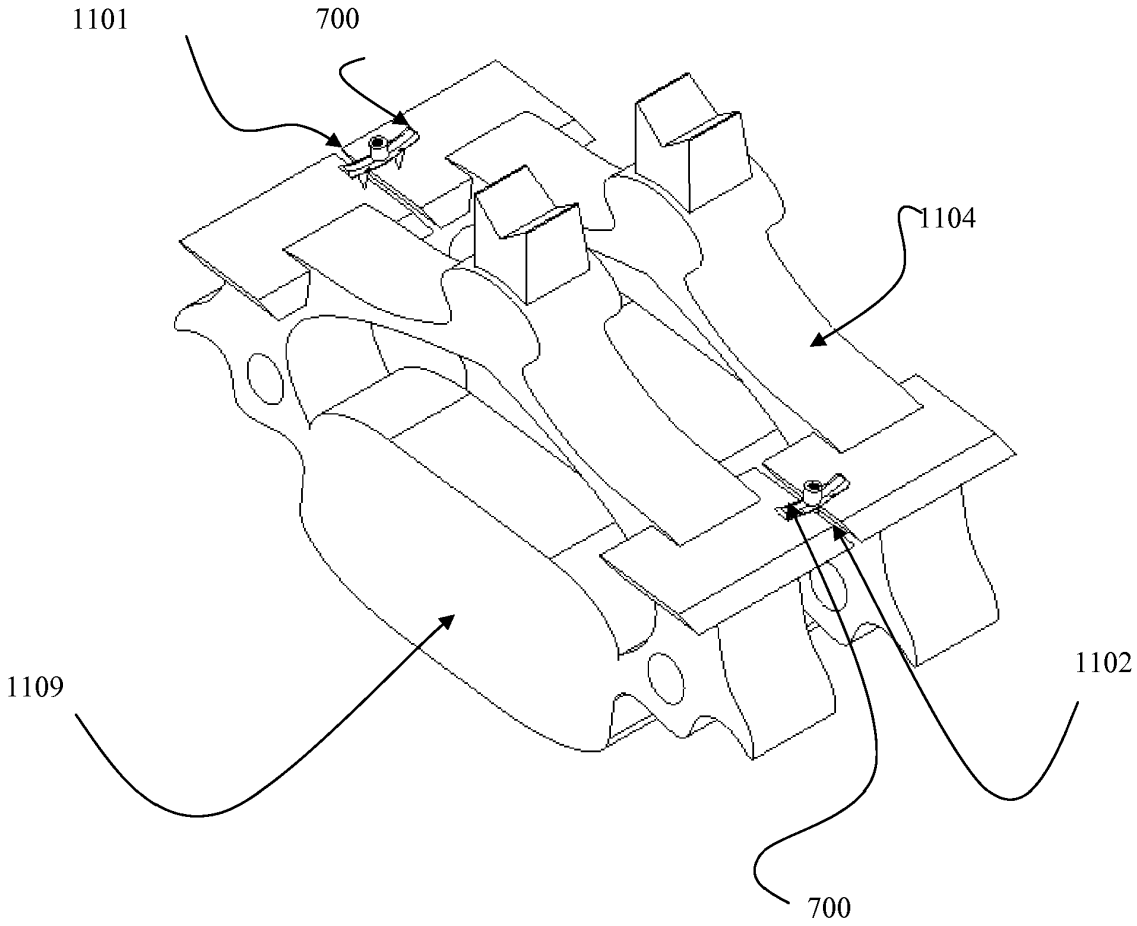


Fig. 11A

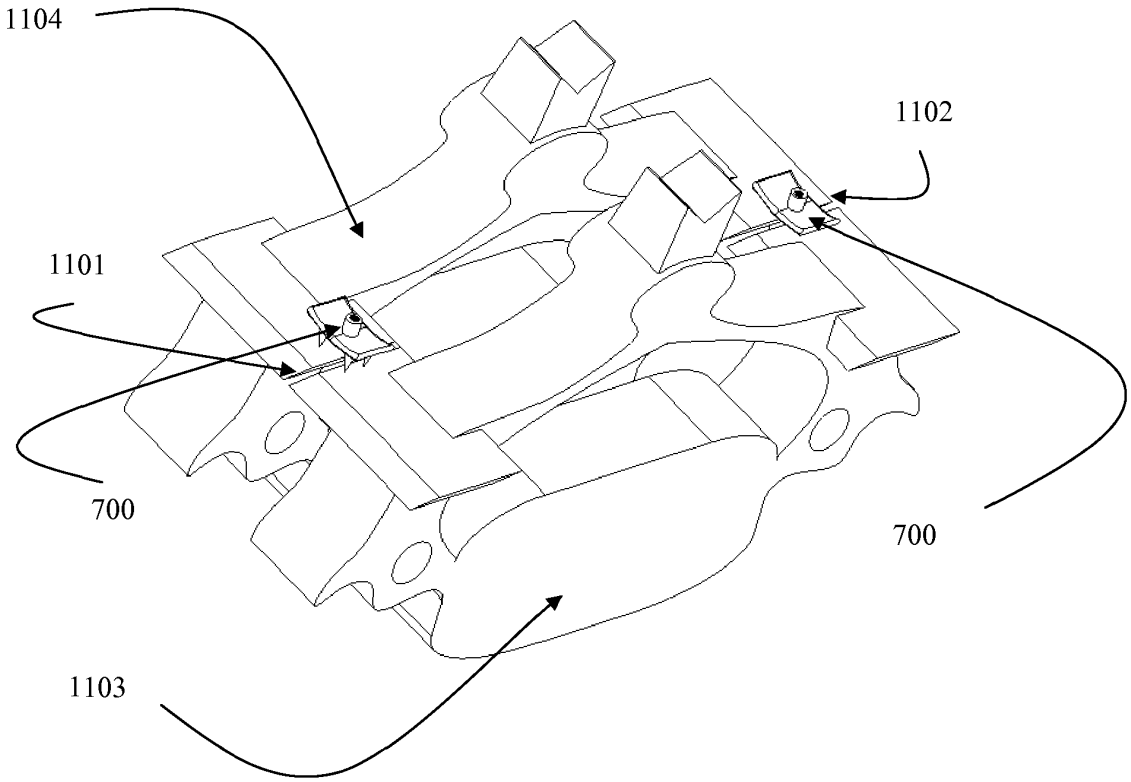


Fig. 11B

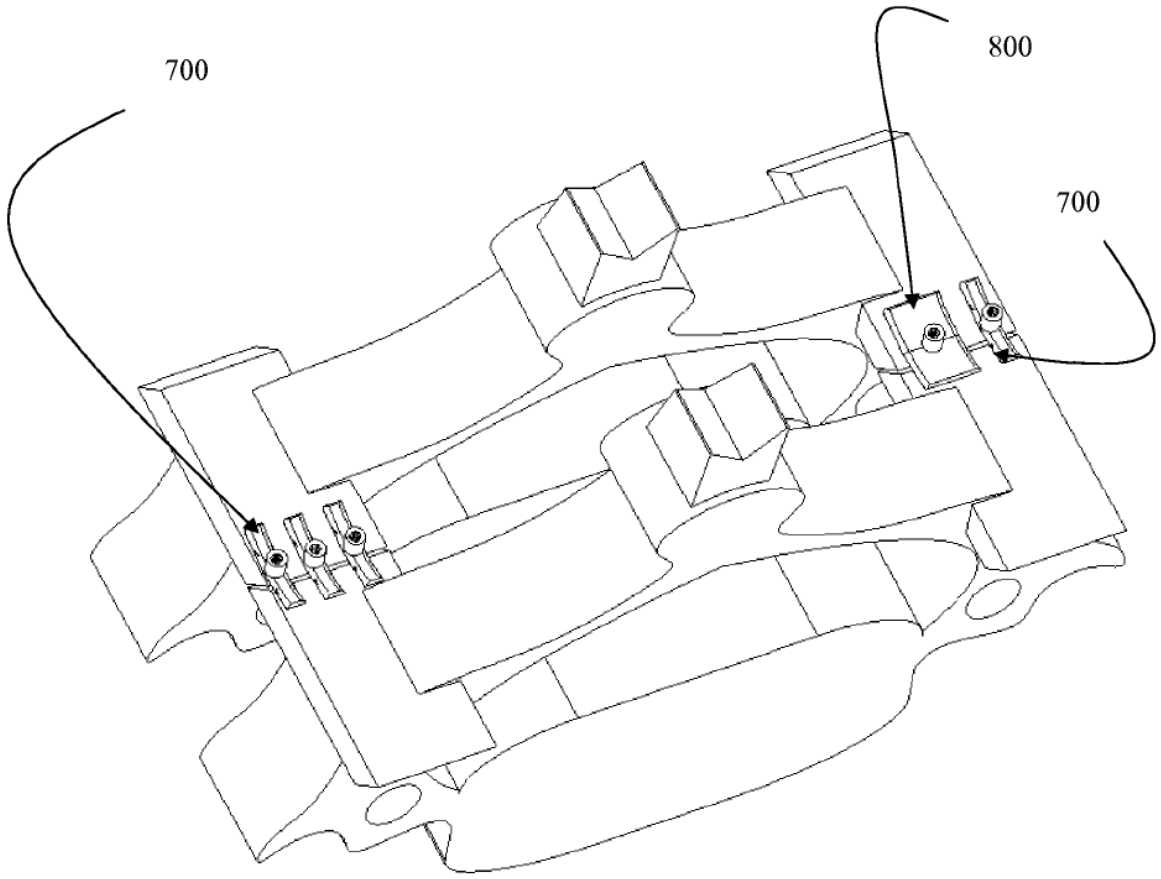


Fig. 11C

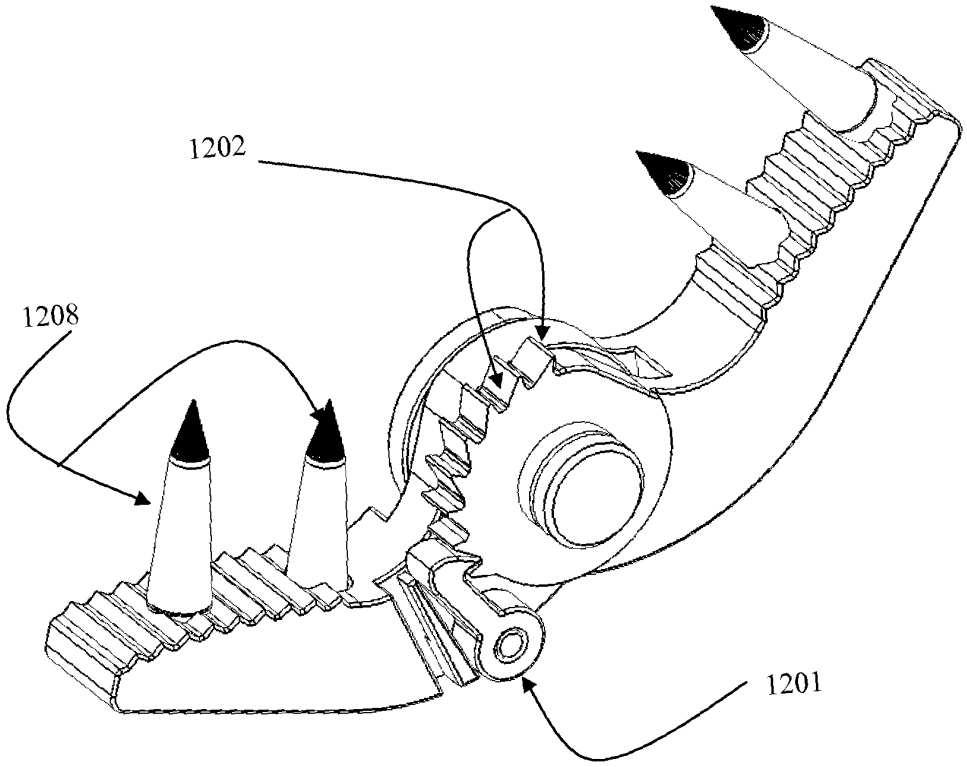


Fig. 12A

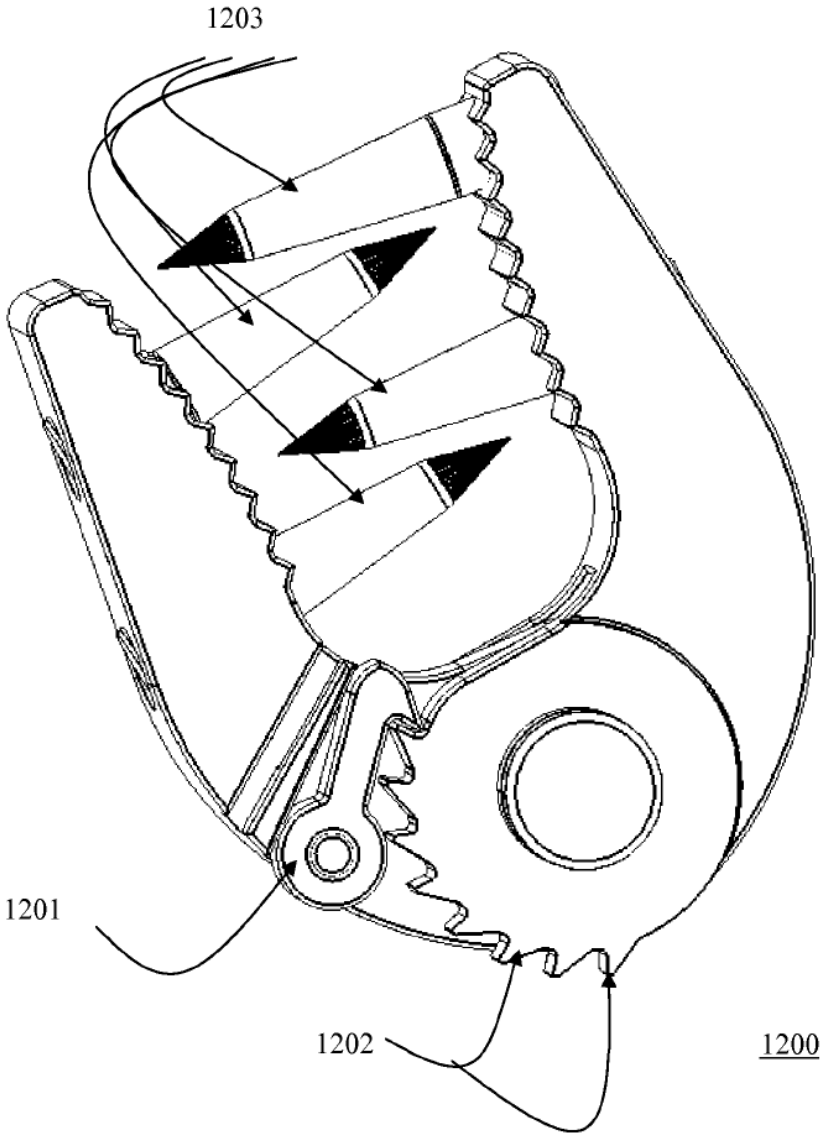


Fig. 12B

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION

As the below named inventor, I hereby declare that:

This declaration is directed to:

[ ] The attached application, or

[X] United States application or PCT international application number 15/894,471

filed on February 12, 2018.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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LEGAL NAME OF INVENTOR

Inventor: Ahmnon D. Moskowitz Date (Optional) :

Signature:

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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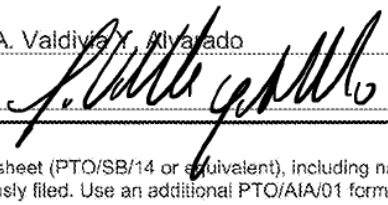
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LEGAL NAME OF INVENTOR

Inventor: Pablo A. Valdivia Y. Alvarado Date (Optional): 30/5/2018

Signature: 

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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LEGAL NAME OF INVENTOR

Inventor: Mosheh T. Moskowitz Date (Optional): 5/11/18

Signature:

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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LEGAL NAME OF INVENTOR

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Signature: Nathan C. Moskowitz

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BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION

[0001] This application is a Continuation-In-Part Application of copending application Serial No. 11/536,815, filed on September, 29, 2006, which is a Continuation-In-Part Application of copending application Serial No. 11/208,644, filed on August 23, 2005 for which priority is claimed under 35, U.S.C. §120; and this application also claims priority under 35 U.S.C. § 119(e) of U.S. provisional application No. 60/670,231, filed on April 12, 2005; the entire contents of all the above identified patent applications are hereby incorporated by reference.

Field of Invention

[0002] The present invention relates to a unique universal bidirectional screw (BDS) system, and in particular its application to the spine, also referred to as bi-directional fixating transvertebral (BDFT) screws which can be used as a stand-alone intervertebral device which combines the dual functions of an intervertebral spacer which can be filled with bone fusion material(s), as well as a transvertebral bone fusion screw apparatus. In the posterior lumbosacral and thoracic spine, BDFT screw/box constructs can be used independently or supplemented with a novel horizontal mini-plate which prevents upward bone graft intrusion into the thecal sac and nerves. In the anterior lumbosacral spine BDFT screw box constructs can be inserted into and supplemented by a circumferential cage. These posteriorly and anteriorly placed stand-alone

intervertebral body fusion constructs may obviate the need for supplemental pedicle screw fixation.

[0003] The present invention also relates to stand-alone or supplemental posterior cervical and lumbar calibrated inter-articular joint stapling devices which may obviate and/or lessen the need for supplemental pedicle screw fixation.

Description of the Relevant Art

[0004] The history and evolution of instrumented spinal fusion in the entire human spine has been reviewed in our two prior copending applications Serial No. 11/536,815, filed on September, 29, 2006, and Serial No. 11/208,644, filed on August 23, 2005, the related contents of which are hereby incorporated by reference. Currently the majority of posterior cervical and almost all anterior and posterior lumbosacral and thoracic fusion techniques are typically supplemented with pedicle screw placement. Complications of pedicle screw placement in cervical, thoracic and lumbar spine include duration of procedure, significant tissue dissection and muscle retraction, misplaced screws with neural and/or vascular injury, excessive blood loss, need for transfusions, prolonged recovery, incomplete return to work, and excess rigidity leading to adjacent segmental disease requiring further fusions and re-operations. Recent advances in pedicle screw fixation including minimally invasive and image-guided technology, and the development of flexible rods, imperfectly address some but not all of these issues.

[0005] Complications of all current spinal interbody fusion devices is their lack of coverage of the majority of the cross- sectional area of the vertebral endplates, and their lack of adequate, if any capacity to penetrate bone, and hence the heightened risk of implant extrusion. Furthermore the bone and biological bone fusion agents which are packed into the intervertebral space can easily blossom and grow upward into the thecal sac causing neural compression, in the absence of a physical barrier between the fusing growing bone, and the thecal sac.

Summary

[0006] Herein we describe multiple device embodiments which combine in a single construct the dual functions of an intervertebral spacer maintaining disc space height, and transvertebral body fusion screws.

[0007] We also introduce an entirely novel horizontal mini-plate capping off the intervertebral space capable of functioning as a physical barrier preventing upward bone intrusion and/or compression of the ventral thecal sac, and traversing and exciting nerve roots.

[0008] Furthermore, we present an advanced mechanism in calibrated posterior facet joint stapling compared to our previous designs illustrated in our co-pending patents. We also introduce the entirely novel concept of posterior cervical facet staples to obviate and/or diminish the need for posterior cervical pedicle screw instrumented fusion. Using combinations and permutations of different embodiments of cervical facet staples in a modular manner advances

[0009] To achieve safe, effective and minimally invasive segmental spinal fusion, applicants propose the use of novel bi-directional fixating transvertebral (BDFT) screws which can be strategically inserted via anterior or posterior surgical spinal approaches into the anterior and middle columns of the interverterbral disc space. In our previous applications these bi-directional screws employed turning a wormed driving screw which turns a spur gear which in turn simultaneously turns a rostral oriented screw into the cephalad vertebral body, and a caudal directed screw into the caudal vertebral body. The vertebral bodies above and below the disc space by virtue of their engagement and penetration by the BDFT screws are thus linked, interlocked, and eventually biologically fused with placement of intervertebral bone agents.

[0010] In this current application one or more of the described embodiments may eliminate the intervening wormed driving screws and gears required by previous designs, e.g., a gearless screw box is achieved. We have designed a screw box to be placed inter-vertebrally, either unilaterally or bilaterally, in particular, posteriorly between vertebral bodies. The housing screw box incorporates built-in screw and/or drill guides which allow the direct placement and insertion of two self drilling screws which are driven in two opposing directions into superior and inferior vertebral bodies, respectively. One screw within the screw box is angled superiorly, and the other screw in the screw box is angled inferiorly.

[0011] In yet another embodiment, in addition to these features we designed an

expanding screw box with sliding triangular bases to house two screws driven in two opposing directions which can be expanded in two simultaneous directions , height and depth, by turning a built-in screw adjuster. This is accomplished by a combined positioning tool/screw guide/cage expander to further enhance trajectory precision and to simultaneously expand the screw box in height and depth to custom-fit the individual disc space height. This embodiment has two sub-embodiments; one has two laterally oriented BDFT screws, and the other has a lateral and a medial oriented BDFT screw. These innovations represent a continued evolution of our concept of expandable fusion cages described in our previous co-pending patents.

[0012] In yet another embodiment we designed a screw box which houses only one, instead of two screws. Each box allows the placement of one superior or inferior directed screw on one side (left or right) , and the contra lateral screw box device allows placement of an inferior or superior oriented screw which goes in the opposite direction of the contra lateral device. In totality these two separate single screw boxes fuse the superior and inferior vertebrae. The potential advantage of this embodiment is that it diminishes the width of the screw box in cases where it might be favorable to have less nerve root retraction with a smaller width device.

[0013] In all screw-box embodiments, a rostral-directed screw is passed through one built-in screw guide of the device which then is inserted and screwed into the superior vertebral body. Then a caudaly directed screw is passed through an adjacent built-in screw guide which then is inserted and screwed into the inferior

vertebral body. The novelty of this design is the built-in prescribed angles of the integral screw guides which allow the posterior transvertebral penetration into the vertebral bodies. This is a truly amazing feat accomplished in the posterior lumbar spine considering the small anatomically restricted work zone within which to work, which is very narrowly prescribed by obtuse angulations between screw and intervertebral bone surfaces, and by nerve root, facet joint and pedicle. We have also designed a positioning tool for the placement of the non-expandable screw boxes which has a screwdriver with a flexible shaft specifically designed to fit these devices if a straight screw driver impedes screw placement. Hence these external tools provide the means in any circumstance to accomplish precision screw trajectory. The embodiments described herein compared to our previous co-pending patent designs, streamline and ease production of bi-directionally oriented transvertebral screws, and allows placement of longer and wider screws with greater bone penetration to provide yet a sturdier fusion construct. The designs are also easily modifiable for anterior placement into the cervical spine. The expandable embodiment of the screw box can also be enlarged and modified to be suitable for cervical, thoracic and lumber vertebral body replacements.

[0014] The box casings have multiple perforations to allow both screw traversal and horizontal bone packing preventing upward vertical migration of bone. The boxes prevent subsidence. Both the inside of the denuded intervertebral space, and the screw boxes can be packed with autologous or allograft bone, BMP, DBX or similar osteoconductive material. Posteriorly or anteriorly in the lumbar

[0015] It is believed that BDFT- screw constructs provide as strong or stronger segmental fusion as pedicle screws without the complications arising from pedicle screw placement which include screw misplacement with potential nerve and/or vascular injury, violation of healthy facets, possible pedicle destruction, blood loss, and overly rigid fusions. By placing screws across the intervertebral space from vertebral body to vertebral body, engaging anterior and middle spinal columns, and not the vertebral bodies via the transpediclar route, the healthy facet joints, if they exist, are preserved. Because this technique accomplishes both anterior and middle column fusion, without rigidly fixating the posterior column, it in essence creates a flexible fusion. This device therefore is a flexible fusion device because the preserved posterior facet joints retain their function achieving at least a modicum of mobility and hence a less rigid (i.e. a flexible) fusion.

[0016] The very advantage of transpedicular screws which facilitate a strong solid fusion by rigidly engaging all three spinal columns is the same mechanical mechanism whereby complete inflexibility of all columns is incurred thereby leading to increasing rostral and caudal segmental stress which leads to an

increased rate of re-operation.

[0017] Transvertebral fusion also leads to far less muscle retraction, blood loss, and significant reduction in O.R. time. Thus the complication of pedicular screw pull-out and hence high re-operation rate associated with the current embodiment of flexible fusion pedicle screws/rods is obviated. The lumbosacral screw box embodiments and BDFT screws can be introduced via posterior lateral, transforaminal or anterior interbody fusion approaches /techniques. Although one can opt to supplement these screws with transpedicular screws there would be no absolute need for supplemental pedicle screw fixation with these operative techniques.

[0018] BDFT screw constructs outlined here can also be combined with novel zero-profile horizontal cervical and, lumbar/thoracic mini-plates. Likewise one or two of these devices can be inserted anteriorly with or without circumferential cage supplementation.

[0019] Because the BDFT screws engage a small percentage of the rostral and caudal vertebral body surface area, multi-level fusions can be performed with these devices.

[0020] Previous improvements included a novel calibrated lumbar /thoracic facet stapling device which staples the inferior articulating facet of the superior segment to the superior articulating facet of the caudal vertebral segment unilaterally or bilaterally, which may minimize motion until interbody fusion occurs. In the present patent application we introduce a new design of the staple enhancing its calibrating capability.

[0021] In this patent application we also introduce a novel posterior cervical facet stapling device which staples the inferior articulating facet of the superior cervical segment with the superior articulating facet of the caudal vertebral segment unilaterally or bilaterally.

[0022] The advantage of cervical facet staples is speed and safety. The risks of cervical facet pedicle screw fixation which include nerve root and vertebral artery injuries are completely obviated. Thus they thereby achieve the same function of pedicle screws without the risks.

[0023] Placement of different embodiments of the cervical facet staples along unilateral and/or bilateral facet joints in a modular manner, lead to differing degrees of calibrated motion joint motion hence introducing for the first time the concept of calibrated cervical fusion.

[0024] Currently failed anterior lumbar arthroplasties are salvaged by combined anterior and posterior fusions. BDFT screw constructs could be utilized as a one-step salvage operation for failed/extruded anteriorly placed lumbar artificial discs obviating the above salvage procedure which has far greater morbidity.

[0025] For example, in one general aspect, a self-drilling bone fusion screw apparatus includes a first sliding box, a second sliding box, positioned relative to the first sliding box, a first screw member having a tapered end and a threaded body disposed within the first sliding box, a second screw member having a tapered end and a threaded body disposed within the second sliding box, and an adjuster for adjusting the height of the sliding boxes.

[0026] Implementations of this aspect may include one or more of the following features. For example, the first and second screw members may be medially aligned. At least one of the first and second screw members may be laterally aligned. The first and second screw members are laterally aligned. One of the first and second screw members is laterally aligned and the other screw member is laterally aligned. The first and second sliding boxes may be substantially triangularly shaped. The triangularly shaped first and second sliding boxes may include a sliding rail and ridged surfaces. The triangularly shaped first and second sliding boxes may include holes for bone grafts. The adjuster may include a screw.

[0027] In another general aspect, a self-drilling bone fusion screw apparatus includes a box, a first screw member having a tapered end and a threaded body disposed at least partially within the box and laterally aligned with the box, a second screw member having a tapered end and a threaded body disposed at least partially within the box and laterally aligned with the box, and a plurality of ridges disposed on along the sides of the box.

[0028] Implementations of this aspect may include one or more of the following features. For example, the apparatus may include bone graft holes. The apparatus may be attachable to a second self-drilling fusion screw apparatus via a plate.

[0029] In another general aspect, a self-drilling bone fusion screw apparatus may include a first box, a first screw member having a tapered end and a threaded body disposed at least partially within the first box and laterally aligned

with the first box, a second box, a second screw member having a tapered end and a threaded body disposed at least partially within the second box and laterally aligned with the second box, and an attachment member for engaging the first and second boxes.

[0030] Implementations of this aspect may include one or more of the following features. For example, the self-drilling bone fusion screw apparatus may include bone graft holes. The plate may be directly joined to the first and second boxes by a plurality of screws. The attachment member for engaging the first and second boxes may include a plate or the attachment member may include a circumferential cage defining at least one recess. The first and the second boxes may be positioned within or securely held within the recess of the circumferential cage, e.g, with an interference fit.

[0031] In another general aspect, a tool assembly for manipulating a self-drilling bone fusion screw apparatus includes a handle, a gripper cooperating with the handle and having a plurality of prongs, a screw guide, held in place the plurality of prongs, for controlling the direction of self-drilling screws that are screwed into a vertebral body.

[0032] Implementations of this aspect may include one or more of the following features. For example, the tool assembly for manipulating a self-drilling bone fusion screw apparatus may include a key for controlling an adjustment device which controls the height of the self-drilling bone fusion screw apparatus. The tool assembly according to claim may include a driver assembly. The driver assembly may include a handle, a drive bit portion, and a flexible drive shaft

extending between the handle and the drive bit portion for manipulating a screw of an expandable or non-expandable screw box. The assembly may include one or more of an expandable screw box and/or a non-expandable screw box. The boxes may include one or more screws. The screw boxes may be joined by or include an attachment member, such as a plate and/or a circumferential cage.

[0033] In another general aspect, a cervical facet staple includes a curved staple base, at least two prongs attached to the bottom surface of the curved staple base, and an insertion member disposed on the top surface of the curved staple base.

[0034] Implementations of this aspect may include one or more of the following features. For example, the staple may include at least four prongs attached to the bottom surface of the curved staple base. The insertion member may include a threaded insert.

[0035] In another general aspect, an impaction tool for a cervical facet staple includes a handle, a stem attached to the handle, a plurality of wings for contacting the cervical facet staple, and an insertion member for coupling the cervical facet staple to the impaction tool.

[0036] Implementations of this aspect may include one or more of the following features. For example, the handle may include a flattened portion that can be struck by a mallet.

[0037] In another general aspect, a lumbar facet staple includes a pair of rotating arms, at least two prongs attached to the inner surfaces of the rotating

arms, a plurality of spurs attached to one of the rotating arms, and a ratchet attached to one of the rotating arms. The rotating arms and prongs are rotated to a closed position to staple a lumbar facet joint.

BRIEF DESCRIPTION OF DRAWINGS

[0038] Figures 1A-D illustrate the Lumbar intervertebral screw box with one lateral oriented BDFT screw and one medially oriented two BDFT screw (Embodiment IA) in sagittal-oblique (Figure 1A), superior perspective(Figure 1B), inferior perspective (Figure 1C) and exploded (Figure 1D) views.

[0039] Figure 1E illustrates the lumbar intervertebral expandable screw box with two lateral oriented BDFT screws (Embodiment IB; sagittal-oblique view).

[0040] Figures 2A-C illustrate the Lumbar intervertebral non-expandable screw box with two BDFT screws (Embodiment II) in lateral (Figure 2A), oblique (Figure2B), and superior perspective (Figure 2C) views.

[0041] Figure 3 illustrates a superior oblique perspective view of left and right lumbar intervertebral non-expandable screw boxes with one BDFT screw (Embodiment III).

[0042] Figures 4A-B illustrate the horizontal intervertebral zero-profile mini-plate prior to insertion (Figure 4A), and after insertion (Figure 4B) into two non-expandable lumbar intervertebral screw boxes with two BDFT screws.

[0043] Figure 4C illustrates two non-expandable lumbar intervertebral screw

boxes with two screws within a large circumferential cage for anterior placement into the lumbar spine

[0044] Figures 5A-C illustrate t positioning tool / screw guide/box expander in oblique perspective (Figure 5A), lateral (Figure 5B), and exploded (Figure 5C) views.

[0045] Figure 5D illustrates a superior oblique perspective view of the positioning tool/drill guide/box expander component.

[0046] Figures E-G illustrate the sequential steps (I-III) of the positioning tooll/screw guide/box expander assembly. Step I (Figure5E), step II (Figure 5F), and step III (Figure 5G).

[0047] Figures 5H-I illustrate the positioning tool for impaction and placement of the non-expandable screw box with two transvertebral screws. Embodiment I has a rectangular positioning handle (Figure 5H), and embodiment II has a circular positioning handle (Figure 5I)

[0048] Figures 6A-B illustrate the insertion of expandable Lumbar bi-directional screw box with two BDFT screws into the Lumbar spine in oblique (Figure 6A) and lateral (Figure 6B) views.

[0049] Figures7A-B illustrate the cervical facet staple (Embodiment I) in lateral (Figure 7A) and oblique (Figure 7B) views.

[0050] Figures 8-C illustrate the cervical facet staple (Embodiment II) in oblique (Figure 8A), superior perspective (Figure 8B) and inferior-oblique (Figure 8C)

views.

[0051] Figure 9A illustrates the two-pronged cervical facet staple inserter/impactor (Embodiment I).

[0052] Figure 9B illustrates the two-pronged cervical facet staple inserter/impactor inserted into the staple (Embodiment I).

[0053] Figure 10A illustrates the four pronged cervical facet staple impactor (Embodiment II).

[0054] Figure 10B illustrates the four pronged cervical facet staple impactor inserted into the cervical facet staple (Embodiment II).

[0055] Figure 10C illustrates an inferior-oblique perspective view of the four – pronged cervical facet staple impactor (Embodiment II).

[0056] Figure 11A illustrates placement of two-pronged cervical facet staples in a three-dimensional cervical spine.

[0057] Figure 11B illustrates placement of four-pronged cervical facet staples in a three-dimensional cervical spine.

[0058] Figure 11C illustrates modular placement of two and four pronged cervical facet staples in a three-dimensional cervical spine to achieve differing calibrated degrees of flexibility.

[0059] Figures 12 A-B illustrate the Lumbar facet joint staple with a calibrated ratcheting mechanism in opened (Figure A) and closed (Figure B) positions.

DETAILED DESCRIPTION OF THE INVENTION

1. THE MEDICAL DEVICE

[0060] Referring to Figures 1-6, the above described problem can be solved in the thoracic and lumbar spine by insertion into the denuded intervertebral disc space multiple embodiments of screw box constructs with BDFT screws.

[0061] Figures 1A-D illustrate three-dimensional views of the Lumbar intervertebral expandable screw box 100 with two BDFT screws 101, 102; one lateral and one medially oriented (Embodiment IA). Figure 1E illustrates a sagittal-oblique view of the lumbar intervertebral expandable screw box 120 with two lateral oriented BDFT screws 121, 122 (Embodiment IB).

[0062] The expandable box 100 consists of top and bottom triangular sliding bases 103, 104 (Figures 1-D). The superior and inferior segments of the height/depth adjusting screw 105 are integrated and connected to the two separate top and bottom triangular bases 103, 104, respectively. By turning this adjusting screw 105 back and forth i.e. clock-wise, and counter clockwise, the sliding rails 106 of the top triangular base 103 (Figure 1D) slide up and down the rail inserts 107 on the bottom triangular base 104 (Figure 1D). This action will simultaneously alter the intervertebral height and depth of the screw box 100 allowing individualized custom fitting of the screw box 100 conforming to the dimensions of the disc space.

[0063] Transvertebral screw 101 penetrates the top base 103, and transvertebral screw 102 traverses the bottom base 104 of the screw box 100. The two screws 101, 102 traverse the screw box 100 in opposing directions, bi-

directionally (whether they are lateral or medially oriented). The external edges of the triangular bases 103, 104 in contact with vertebral body surfaces include ridges 107. This facilitates the screw box's 100 incorporation into and fusion with the superior and inferior vertebral bodies (Figures 1A-E). Both top and bottom screw box bases 103, 104 are perforated with holes 108 to allow bone placement for fusion. The entire construct, furthermore, is hollow to allow bone filling. Hence this device functions as both an intervertebral bone fusion spacer and bi-directional transvertebral screw fusion device.

[0064] Figures 2A-C illustrate three-dimensional views of the Lumbar intervertebral non-expandable screw box 200 with two BDFT screws 201, 202 (Embodiment II). Screws 201 and 202 perforate and orient in opposing, superior and inferior directions. There are holes 208 and hollow spaces allowing packaging with bone. There are also holes which allow the traversal of screws. The superior and inferior edges include ridges 207 to facilitate integration and fusion with superior and inferior vertebral bodies. The expandable screw box 200 may include a screw insert 209 to attach a horizontal mini-plate (not shown). The self-contained internalized drill guides are at a 25 degree angle. The screw boxes can be designed with the internalized drill guides with different angles and/or different positions within the box.

[0065] Figure 3 illustrates a three-dimensional view of left and right lumbar intervertebral non-expandable screw boxes 300a, 300b with one BDFT screw 301 or 302 (Embodiment III). It is roughly half the width of Embodiments I and II. Screw 301 is inserted into screw box 300a (left) and screw 302 is inserted into

screw box 300b (right). There are holes 308 and hollow spaces allowing packing of bone to achieve biological fusion. The combined effect of one superior oriented and one inferior oriented screw fuses the superior and inferior vertebral bodies with small constructs. This also enables placement of larger dimension screws compared to embodiments I and II.

[0066] Figures 4A and B illustrate three-dimensional views of the horizontal intervertebral zero profile mini-plate 400 with two non-expandable lumbar intervertebral screw boxes 300a, 300b housing two BDFT screws 301, 302. Figure 4A illustrates the perforations 401 within the plate 400 through which small plate securing screws 310 will be inserted to connect it to the built-in screw holes of the screw box 300a, 300b (Figure 4B). The horizontal mini-plate 400 together with the top surfaces of left and right screw boxes 300a, 300b provide a physical barrier between the underlying bone placed beneath it (not illustrated), and the thecal sac and nerve roots above it (not illustrated).

[0067] Figure 4C illustrates two screw boxes 300c, 300d within a circumferential cage 420 (2 in 1) construct which is designed for anterior placement into the lumbar spine. There are slots 308a, 308b for bone graft placement, both outside and inside the boxes. The circumferential cage 420 has perforations 401a for the placement of transvertebral screws (not shown).

[0068] Figures 5A-C illustrate three-dimensional views of the external drill /screw guide -box expander 500 which assists in screw trajectory and box expansion (embodiments IA-B). For embodiments II and III, the same instrument is utilized; however, an expanding Allen key component is not used.

[0069] The key components of this device include an Allen key 501, a spring 502, a handle 503, a griper 504 and a screw guide 505. The Allen key 501 when inserted in the insertion 514 and turned, turns the screw adjuster (Figure 5C) which in turn regulates top and bottom triangular screw box base sliding, and hence box 200 width and depth. The griper 504 has griper prongs 506 which insert into grooves of the screw guide 505 and the screw box 200 (Figures 5A-D) thus perfectly aligning them.

[0070] Figure 5D illustrates a superior oblique view of the screw guide 505 demonstrating insertions 509 for griper prong 506, built-in trajectory guides 511, 512 for insertions of screws 101 and 102, and the Allen key 501.

[0071] Figures 5E-G illustrate three–dimensional views of the sequential steps necessary for the external guide assembly. Figure 5E illustrates the insertion of the Allen key 501 into the handle 503. Figure 5F illustrates the insertion of the handle 503 through the spring 502 and griper 504. Figure 5G illustrates insertion of the griper 504 into the screw guide 505.

[0072] Figures 5H-I illustrate three-dimensional views of a positioning tool 500a for impaction and placement of two transvertebral screws 201, 202 in the non-expandable screw box 200. The driver assembly 550 consists of a screw driver 551, a flexible shaft 552 and a square recess bit 553. This facilitates turning the screws 201, 202 into the bone. The flexible shaft 552 facilitates the avoidance of spinous processes which might hinder the screw driving if the shaft 552 were straight. The positioning tool 500a can have a rectangular handle, Embodiment I (Figure5H), or a circular handle, Embodiment II (Figure 5I). This serves to

position the screw box within the intervertebral space, and screws 201, 202 within the screw box. Once positioned, the screw box can be impacted by tapping the handle with a mallet (not shown). The positioning tool's 500a griper handle inserts into the screw guide and the box, which maintains alignment.

[0073] Figure 6A illustrates a three-dimensional view of insertion of the construct (Embodiment I) into the lumbar intervertebral disc space.

[0074] Figure 6B illustrates a three dimensional lateral view of insertion of the construct (Embodiment I) into the disc space with short screws. Placement with longer screws would capture more bone.

[0075] Figures 7Aand B illustrate three-dimensional views of the two-pronged cervical facet staple 700 (Embodiment I). There is a staple base 701 which is contoured to align with the curved surface of the cervical facet joints. There is a superior impactor threaded insert 702. An impactor can be screwed into this insert 702 and then impacted with a mallet. The two spikes 703, 704 perforate the inferior and superior facets of the superior and inferior vertebral bodies hence leading to cervical facet joint fusion. The spikes can be designed with ridges and/ or fishhooks to facilitate irreversible extraction.

[0076] Figures 8A-C illustrate three-dimensional views of the four-pronged cervical facet staple 800 (Embodiment II). Likewise it has a staple base 805 contoured specifically for the surface of the facet joint. It also has an impactor insert 806. The insertion of a device with four prongs 801-804 instead of two prongs further limits the degrees of motion of the joint hence making the fusion more rigid.

[0077] Figures 9 A-B illustrate a three-dimensional view of the two-pronged cervical staple impactor 900. It has a handle 901, a stem 902, and a screw insert 903 which can be screwed into the threaded staple insert. The impactor has two wings 904 which keep the staple base edges in place facilitating staple impaction. The handle 901of the impactor 900 is broad in order to allow impaction by a mallet.

[0078] Figures 10A -C illustrate three-dimensional views of the four-pronged cervical staple impactor 1000 (Embodiment II). It has the same features as the two-pronged impactor 900, except its wings 1004 are broader accommodating the broader staple base. The impactor 1000 also includes a handle 1001, a stem 1002, and an impact screw 1003.

[0079] Figure 11A illustrates a three-dimensional view of placement of the two pronged cervical facet staple 700 into a cervical spine model having vertebral body 1103 and lamina 1104. One staple 700 is perched on the joint 1101 prior to impaction. The other staple 700 is impacted.

[0080] Figure 11B illustrates a three-dimensional view of placement of the four pronged cervical facet staple 800 into a cervical spine pre and post impaction.

[0081] Figure 11C illustrates the concept of modularity and incremental diminution of movement of the joint by the modular placement of different combinations and permutations of varying numbers of two and four pronged cervical facet staples 700, 800. If one wishes to have the most flexible (least rigid) fusion, one would place a unilateral two pronged staple 700. One can increase i.e. calibrate increasing degrees of rigidity by increasing the number of

prongs penetrating the facet joints bilaterally. In Figure 11C each facet joint is fused using a total number of six prongs. One side this is accomplished by using three two pronged staples 700, and on the other side using one four pronged staple 800 and one two pronged staple 700. These two embodiments can be mixed and matched unilaterally or bilaterally to vary the degree of rigidity and conversely flexibility of fusion. The most flexible fusion at one level would be accomplished by one staple 700 (2 prongs). The highest level of rigidity would be achieved by placing two four pronged staples 800 on both sides totaling sixteen prongs. Intermediate degrees of relative joint motion can be modulated by insertion into the cervical facet joints staples in two-four prong increments from 2-16. Each additional prong further limits the degree of facet joint motion hence increasing rigidity, and conversely decreasing flexibility. Thus the novel modular use of these embodiments heralds an era of flexible cervical spine fusion.

[0082] Figures 12 A - B illustrate a lumbar facet joint staple 1200 in open and closed positions and having staple prongs 1203. This lumbar facet staple has been thoroughly described in our previous co-pending patent applications, Serial No. 11/536,815, filed on September, 29, 2006, and Serial No. 11/208,644, filed on August 23, 2005, the relevant portion of each of which is hereby incorporated by reference hereinafter. The new improvement of this device includes a ratchet 1201. The staple 1200 can be incrementally closed with increased ratcheting over increasing number of spurs 1202. This achieves increasing calibrated levels of lumbar facet joint fusion, and conversely diminishing joint flexibility. This new designs further enhances the capacity to achieve flexible fusions in the lumbar

spine.

2. THE SURGICAL METHOD

[0083] Exemplary surgical steps for practicing one or more of the foregoing embodiments will now be described.

[0084] The posterior lumbar spine implantation of all the screw box 100, 200, 300 embodiments, with BDFT screws, and horizontal mini-plate 400 can be implanted via previously described posterior lumbar interbody fusion (PLIF) or posterior transforaminal lumbar interbody fusion (TLIF) procedures. The procedures can be performed open, microscopic, closed tubular or endoscopic. Fluoroscopic guidance can be used with any of these procedures.

[0085] After adequate induction of anesthesia, the patient is placed in the prone position. A midline incision is made for a PLIF procedure, and one or two parallel paramedian incisions or a midline incision is made for the TLIF procedure. For the PLIF, a unilateral or bilateral facet sparing hemi-laminotomy is created to introduce screw box 100, 200, 300 embodiments I-III into the disc space, after it is adequately prepared.

[0086] For the TLIF procedure, after unilateral or bilateral dissection and drilling of the inferior articulating surface and the medial superior articulating facet the far lateral disc space is entered and a circumferential discectomy is performed. The disc space is prepared and the endplates exposed.

[0087] Then one screw box 100, 200, 300 of either embodiments I-III is placed

on either right, left or both sides. Then another screw box of embodiments 100, 200, 300 I-III is placed on the contralateral side. For embodiment I the external screw guide 505/ box expander is attached to the screw box (Figures 5A-H). First the Allen key 501 is screwed until the box conforms perfectly to the height and depth of the space. Then a pilot hole can be drilled or an awl can start a pilot hole in the vertebral bodies. Then a transvertebral screw is screwed into the vertebral body via the built- in box screw guides 505. For difficult angles, an angled screw driver can be employed.

[0088] For embodiments II-III the same method is used for placing screws, except the Allen key 501 is not utilized in the absence of plate expansion.

[0089] If bilateral constructs have been inserted, bone is packed into the intervertebral space, as well as within the device. Then the horizontal intervertebral zero profile mini-plate 400 is slid beneath the thecal sac and is secured to both left and right screw boxes with small mini-plate screws 210 (Figures 4A-B). This prevents bone intrusion into the thecal sac and hence possible nerve root compression.

[0090] Figures 6A and B illustrate the process of insertion and final placement of the construct into the lumbar spine. The mini- plates 400 can come in different horizontal lengths and widths to accommodate different intra and inter -patient disc space diameters. The BDFT screws can come in different widths, lengths and thread designs.

[0091] The anterior thoracic and lumbar spine implantation of one, two or three screw box constructs 100, 200, 300 and BDFT screws can be performed in a

similar manner to the posterior application. Likewise, a horizontal mini-plate 400 can be used to cap two or three screw box constructs 100, 200, 300 (one placed midline deeply, one placed left and one placed right, forming a triangulation). Alternatively two screw box constructs may be placed into a circumferential ring for anterior placement. Anterior placement of these devices can be performed into the L4/5 and L5/S1 spaces on the supine anesthetized patient via previously described open microscopic or endoscopic techniques. Once the disc space is exposed and discectomy and space preparation are performed, placement of one, two or three screw box embodiments 100, 200, 300 (I-III) or a 2 in I construct can be placed. The screw placement is facilitated by the internal screw guides, and different positioning tools ((Figure 5). A right angled screw driver and/or ratchet could alternatively be employed A capping mini-plate 400 may be applied if desirable. The mechanism of screw placement and mini-plate 400 attachment are identical to what was described above.

[0092] The posterior placement of screw box constructs 100, 200, 300 alone or combined with horizontal mini-plates 400 into the thoracic spine can be performed via previously described transpedicular approaches; open or endoscopic. The anterior placement into the thoracic spine can be accomplished via a trans-thoracic approach. Once the disc space is exposed via either approach, any combination of the above mention Embodiments (I-III) can be inserted. Engagement of the devices is identical to what was mentioned above.

[0093] For posterior placement of cervical facet staple 700, 800 embodiments, after adequate induction of anesthesia the patient is flipped prone and his head

and neck secured. A single midline or two para-median incisions are made for unilateral or bilateral or multilevel placement of staples. Ultimately the facet joint is exposed. Alternatively and preferably this can be performed percutaneously under fluoroscopic guidance with intravenous sedation. The staple 700, 800 (Embodiments I or II) is loaded into the impactor 900, 1000. The staple 700, 800 is placed on the two articulating cervical facets, and then impacted into the joint. To achieve modular calibrated fusion different combinations and permutations of cervical facet stales can be inserted ranging from a single unilateral two pronged staple providing a high degree of flexibility to a total of four bilaterally placed four pronged staples 800 (16 prongs) leading to the highest degree of rigidity. Additional bone may or may not be placed in its vicinity to facilitate permanent and solid fusion. This procedure can be performed open, closed, percutaneously, tubulary, endoscopically or microscopically. Figures 11 A-C illustrates placement of the staples 700, 800 in the cervical spine.

[0094] We have previously described surgical placement of the lumbar facet joint staple in our two co-pending patents. The surgical procedure for this device is identical to that which has been previously mentioned.

[0095] The present inventions may provide effective and safe techniques that overcome the problems associated with current transpedicular based cervical, thoracic and lumbar fusion technology, and for many degenerative stable and unstable spine disease. These inventions could replace much pedicle screw-based instrumentation in many but not all degenerative spine conditions.

[0096] The speed and simplicity of placement of cervical and lumbar facet

staples, and placement of Lumbar screw box –BDFT constructs far exceeds that of current pedicle screw technology. Furthermore, these devices have markedly significantly decreased risk of misguided screw placement, and hence decreased risk of neural and vascular injury, and blood loss. In the lumbar spine BDFT screw constructs and facet staples could be applied modularly in different combinations to achieve different degrees of rigidity (flexibility). Patients having these devices would have decreased recovery and back to work time. These devices most likely lead to similar if not equal fusion with significantly less morbidity, and hence overall make them a major advance in the evolution of spinal instrumented technology leading to advances in the care of the spinal patient.

[0097] Another major novelty and advance is the introduction of simple and safe modular calibrated cervical flexible fusion. To our knowledge neither a similar device nor a similar mathematical concept of modular joint flexibility/fusion calibration has been postulated for the cervical spine or for any other articulating joint.

[0098] To our knowledge there have not been any previously described similar posterior lumbar and thoracic combined spacer and screw constructs. These devices can similarly be modified to stabilize bone fractures throughout the entire body. To our knowledge the description of zero to subzero profile anterior or posterior horizontal spinal plates which traverse the diameter of the disc space has not been previously described.

We claim:

1. A self-drilling bone fusion screw apparatus, which comprises:

a first sliding box;

a second sliding box, positioned relative to the first sliding box;

a first screw member having a tapered end and a threaded body disposed within the first sliding box;

a second screw member having a tapered end and a threaded body disposed within the second sliding box,; and

an adjuster for adjusting the height of the sliding boxes.

2. The self-drilling bone fusion screw apparatus according to claim 1 wherein the first and second screw members are medially aligned.

3. The self-drilling bone fusion screw apparatus according to claim 1 wherein at least one of the first and second screw members is laterally aligned.

4. The self-drilling bone fusion screw apparatus according to claim 3 wherein both the first and second screw members are laterally aligned.

5. The self-drilling bone fusion screw apparatus according to claim 1 wherein one of the first and second screw members is laterally aligned and the other screw member is laterally aligned.

6. The self-drilling bone fusion screw apparatus according to claim 1 wherein the first and second sliding boxes are substantially triangularly shaped.

7. The self-drilling bone fusion screw apparatus according to claim 6 wherein the triangularly shaped first and second sliding boxes include a sliding rail and ridged surfaces.

8. The self-drilling bone fusion screw apparatus according to claim 7 wherein the triangularly shaped first and second sliding boxes include holes for bone grafts.

9. The self-drilling bone fusion screw apparatus according to claim 8 wherein the adjuster includes a screw.

10. A self-drilling bone fusion screw apparatus, which comprises:

a box;

a first screw member having a tapered end and a threaded body disposed at least partially within the box and laterally aligned with the box;

a second screw member having a tapered end and a threaded body disposed at least partially within the box and laterally aligned with the box; and

a plurality of ridges disposed on along the sides of the box.

11. The self-drilling bone fusion screw apparatus according to claim 10 which further includes bone graft holes.

12. The self-drilling bone fusion screw apparatus according to claim 11 which is attachable to a second self-drilling fusion screw apparatus via a plate.

13. A self-drilling bone fusion screw apparatus, which comprises:

a first box;

a first screw member having a tapered end and a threaded body disposed at least partially within the first box and laterally aligned with the first box;

a second box;

a second screw member having a tapered end and a threaded body disposed at least partially within the second box and laterally aligned with the second box; and

an attachment member for engaging the first and second boxes.

14. The self-drilling bone fusion screw apparatus according to claim 13 which further includes bone graft holes.

15. The self-drilling bone fusion screw apparatus according to claim 13 wherein the plate is joined to the first and second boxes by a plurality of screws.

16. A tool assembly for manipulating a self-drilling bone fusion screw apparatus, which comprises:

a handle;

a gripper cooperating with the handle and having a plurality of prongs;

a screw guide, held in place the plurality of prongs, for controlling the direction of self-drilling screws that are screwed into a vertebral body.

17. The tool assembly for manipulating a self-drilling bone fusion screw apparatus, according to claim 16, which further includes a key for controlling an adjustment device which controls the height of the self-drilling bone fusion screw apparatus.

18. A cervical facet staple, comprising:

a curved staple base;

at least two prongs attached to the bottom surface of the curved staple base; and

an insertion member disposed on the top surface of the curved staple base.

19. The cervical facet staple, according to claim 18 further including at least four prongs attached to the bottom surface of the curved staple base.

20. The cervical facet staple, according to claim 19 wherein the insertion member includes a threaded insert.

ABSTRACT OF THE DISCLOSURE

A self-drilling bone fusion screw apparatus is disclosed which includes at least first and second sliding boxes. A first screw member having a tapered end and a threaded body is disposed within the first sliding box, and a second screw member having a tapered end and a threaded body disposed within the second sliding box. An adjuster adjusts the height of the sliding boxes. The screw members are screwed into vertebral bodies in order to fuse the vertebral bodies together. A plurality of the self-drilling bone fusion screw apparatuses may be attached together and/or integrated via a plate or cage. Also disclosed is a cervical facet staple that includes a curved staple base and at least two prongs attached to the bottom surface of the curved staple base. .

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION
First Named Inventor/Applicant Name:	Ahmnon D. Moskowitz
Filer:	Kiersten M. Batzli/Emily Whitcomb
Attorney Docket Number:	46440-0009017

Filed as Small Entity

Filing Fees for Track I Prioritized Examination - Nonprovisional Application under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	80	80
UTILITY SEARCH FEE	2111	1	350	350
UTILITY EXAMINATION FEE	2311	1	400	400
REQUEST FOR PRIORITIZED EXAMINATION	2817	1	2100	2100
Pages:				
Claims:				
Miscellaneous-Filing:				
PROCESSING FEE, EXCEPT PROV. APPLS.	2830	1	70	70

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**3000**

Electronic Acknowledgement Receipt	
EFS ID:	45341130
Application Number:	17706873
International Application Number:	
Confirmation Number:	1103
Title of Invention:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION
First Named Inventor/Applicant Name:	Ahmnon D. Moskowitz
Customer Number:	26191
Filer:	Kiersten M. Batzli/Emily Whitcomb
Filer Authorized By:	Kiersten M. Batzli
Attorney Docket Number:	46440-0009017
Receipt Date:	29-MAR-2022
Filing Date:	
Time Stamp:	12:24:59
Application Type:	Utility under 35 USC 111(a)

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Payment Type	DA
Payment was successfully received in RAM	$3000
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	POA.PDF	742073 e977a2e98a0f8d6ba5ca47c2df0cb73b71d444dc	no	2
Warnings:					
Information:					
2	Track One Request	Track1Request.PDF	130015 1ce95acc9d0b9feb0741139289dd9166eb381aa7	no	2
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3	Transmittal of New Application	AppTrans.PDF	152975 5c2d4f3f128f4274185df179ec6d707a50fc44cd	no	2
Warnings:					
Information:					
4	Application Data Sheet	ADS.pdf	1257021 34570768125b56ec1160d13ead34c874b00a1e29	no	10
Warnings:					
Information:					
5	Drawings-only black and white line drawings	Drawings.pdf	3156152 9f9ff04b22feaf7a4681c2b09382e1af2268f64c	no	38
Warnings:					
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6	Oath or Declaration filed	Declarations.pdf	4510683 8b0cbc6175e2529631a9c3944c279ea721d7254a	no	4
Warnings:					
Information:					

7		Application.pdf	3795917 d98367d2bd24e00745e2814ef55dad9edb51d955	yes	32

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	27
	Claims	28	31
	Abstract	32	32

Warnings:					
Information:					
8	Fee Worksheet (SB06)	fee-info.pdf	48933 20fdf58a157d39a5496c9cd2e57c8778faa8da86	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	13793769		

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

Application Number	
Filing Date	
First Named Inventor	Ahmnon D. Moskowitz
Title	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION
Art Unit	
Examiner Name	
Attorney Docket Number	46440-0009017

SIGNATURE of Applicant or Patent Practitioner

Signature	/Kiersten M. Batzli/	Date (Optional)	03/29/2022
Name	Kiersten M. Batzli	Registration Number	75,476
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ *Total of _____ forms are submitted.

62926161.doc

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on the Transmittal.)

☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter, which may be an application filed after the date of this power of attorney, or identified above:

26191

OR

☐ I hereby appoint Practitioner(s) named in the attached list as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter, which may be an application filed after the date of this power of attorney, or identified above.

Please recognize or change the correspondence address for the application identified in the attached transmittal letter to:

☐ The address associated with the above-mentioned Customer Number

OR

☒ The address associated with Customer Number: **26191**

OR

Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Moskowitz Family LLC

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature	Nathan C. Moskowitz	Date (Optional)	7/17/18
Name	Nathan C. Moskowitz		
Title	Manager, Moskowitz Family LLC		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ *Total of _____ forms are submitted.

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Doc Code: TRACK1.REQ
Document Description: TrackOne Request

PTO/AIA/424 (03-14)

CERTIFICATION AND REQUEST FOR PRIORITIZED EXAMINATION UNDER 37 CFR 1.102(e) (Page 1 of 1)

First Named Inventor:	Ahmnon D. Moskowitz	Non provisional Application Number (if known):	
Title of Invention:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION		

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS PRIORITIZED EXAMINATION FOR THE ABOVE-IDENTIFIED APPLICATION.

1. The processing fee set forth in 37 CFR 1.17(i)(1), the prioritized examination fee set forth in 37 CFR 1.17(c), and if not already paid, the publication fee set forth in 37 CFR 1.18(d) have been filed with the request. The basic filing fee, search fee, and examination fee are filed with the request or have been already been paid. I understand that any required excess claims fees or application size fee must be paid for the application.

2. I understand that the application may not contain, or be amended to contain, more than four independent claims, more than thirty total claims, or any multiple dependent claims.

3. The applicable box is checked below:

I. ☒ Original Application (Track One) - Prioritized Examination under § 1.102(e)(1)

i. (a) The application is an original non provisional utility application filed under 35 U.S.C. 111(a). This certification and request is being filed with the utility application via EFS-Web.

---OR---

(b) The application is an original non provisional plant application filed under 35 U.S.C. 111(a). This certification and request is being filed with the plant application in paper.

ii. An executed inventor's oath or declaration under 37 CFR 1.63 or 37 CFR 1.64 for each inventor, **or** the application data sheet meeting the conditions specified in 37 CFR 1.53(f)(3)(i) is filed with the application.

II. ☐ Request for Continued Examination - Prioritized Examination under § 1.102(e)(2)

i. A request for continued examination has been filed with, or prior to, this form.
ii. If the application is a utility application, this certification and request is being filed via EFS-Web.
iii. The application is an original non provisional utility application filed under 35 U.S.C. 111(a), or is a national stage entry under 35 U.S.C. 371.
iv. This certification and request is being filed prior to the mailing of a first Office action responsive to the request for continued examination.
v. No prior request for continued examination has been granted prioritized examination status under 37 CFR 1.102(e)(2).

Signature /Kiersten M. Batzli/	Date 03/29/2022
Name (Print/Typed) Kiersten M. Batzli	Practitioner Registration Number 75,476

Note: *This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required.**

☐ *Total of _____ forms are submitted.

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Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant *(i.e.,* GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	:	Ahmnon D. Moskowitz	Art Unit	:	Unknown
Application No.	:	17/706,873	Examiner	:	Unknown
Filed	:	March 29, 2022	Conf. No.	:	1103
Title	:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION			

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

Prior to examination, please amend the application as indicated on the following pages.

Amendments to the Specification:

Please amend the title as follows:

INTERVERTEBRAL IMPLANT AND TOOL ASSEMBLY ~~BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION~~

Please replace paragraph [0001] beginning after the title with the following paragraphs:

This application is a Continuation Application of U.S. Application Serial No. 16/744,755, filed January 16, 2020, which is a Continuation Application of U.S. Application Serial No. 15/944,117, filed April 3, 2018 (now U.S. Patent 10,537,442), which is a Continuation Application of U.S. Application Serial No. 15/894,471, filed February 12, 2018 (now U.S. Patent 10,390,969), which is a Continuation of U.S. Application Serial No. 13/210,157, filed August 15, 2011 (now U.S. Patent No. 9,889,022), which is a Continuation of U.S. Application Serial Nos. 13/084,543, filed April 11, 2011 (now U.S. Patent No. 8,353,913) and 13/108,982, filed May 16, 2011 (now U.S. Patent No. 9,005,293).

U.S. Application Serial No. 13/084,543 is a Continuation of 11/842,855, filed August 21, 2007 (now U.S. Patent No. 7,942,903). U.S. Application Serial No. 13/108,982 is a Continuation of 11/842,855, filed August 21, 2007 (now U.S. Patent No. 7,942,903), which is a Continuation-in-Part of U.S. Application Serial No. 11/536,815, filed September 29, 2006 (now U.S. Patent No. 7,846,188), which is a Continuation-in-Part of U.S. Application Serial No. 11/208,644, filed August 23, 2005 (now U.S. Patent No. 7,704,279), which claims priority of U.S. Provisional Application Serial No. 60/670,231, filed April 12, 2005; the entire contents of all the above identified patent applications are hereby incorporated by reference.

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1-20. (Cancelled)

21. (New) An intervertebral implant comprising:

an intervertebral cage including:

a top wall including a top surface and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall define an open space capable of receiving bone filling for biological bone fusion; and

an internal screw guide having an internal bore and a counterbore recess, the internal bore having an entry opening and an exit opening, the entry opening of the internal bore formed at a juncture between the internal bore and the counterbore recess, the entry opening of the internal bore formed only in the top surface of the top wall, the counterbore recess formed at least partially in the top surface of the top wall and sized and shaped to accommodate a screw head, and the exit opening formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall.

22. (New) The intervertebral implant of claim 21, wherein the internal bore is coaxial with the counterbore recess.

23. (New) The intervertebral implant of claim 22, wherein the internal screw guide extends through an entire depth of the top wall from the top surface to the bottom surface and exiting at least partially into the open space.

24. (New) The intervertebral implant of claim 23, wherein the intervertebral implant is configured to be inserted into a disc space between a first vertebral body and a second vertebral body and to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion.

25. (New) The intervertebral implant of claim 24, wherein each of the first sidewall and the second sidewall has a surface configured to contact one of the first vertebral body and a second vertebral body when the intervertebral cage is inserted into the disc space.

26. (New) The intervertebral implant of claim 25, wherein the surfaces of the first sidewall and the second sidewall include surface features for contacting the first vertebral body and a second vertebral body.

27. (New) The intervertebral implant of claim 26, wherein the surface features include a plurality of ridges.

28. (New) The intervertebral implant of claim 21, wherein the side surface of the top wall is patterned with a plurality of surface features to create a rough side surface.

29. (New) The intervertebral implant of claim 21, the intervertebral cage including a first indentation on the first sidewall of the intervertebral cage and a second indentation on the second sidewall of the intervertebral cage.

30. (New) The intervertebral implant of claim 21, wherein the internal screw guide is a first internal screw guide, and the intervertebral cage further comprises:

at least a second internal screw guide having a second internal bore with a second entry opening and a second exit opening, the second entry opening formed within a second counterbore recess and oriented in a different direction than the internal bore of the first internal screw guide.

31. (New) The intervertebral implant of claim 21, further comprising:

a threaded hole extending through the top wall in a direction substantially normal to the top surface of the top wall with a diameter of the threaded hole being smaller than a diameter of the internal screw guide, and

a rectangular indentation extending into at least part of the top wall and is oriented with at least one side of the rectangular indentation being substantially parallel to the side surface of the top wall.

32. (New) The intervertebral implant of claim 21, further comprising:

a first slot on a first outer surface of the first sidewall;

a second slot on a second outer surface of the second sidewall, wherein the second slot is positioned opposite of the first slot;

a first circular side hole extending into the first outer surface of the first sidewall;

a second circular side hole extending into the second outer surface of the second sidewall, wherein the second circular side hole is positioned opposite of the first circular side hole,

wherein the first slot and the first circular side hole are both positioned along a first centerline axis that bisects the first sidewall, and

wherein the second slot and the second circular side hole are both positioned along a second centerline axis that bisects the second sidewall.

33. (New) An implant system comprising:

an intervertebral cage including:

a top wall including a top surface and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall define an open space capable of receiving bone filling for biological bone fusion; and

an internal screw guide having an internal bore and a counterbore recess, the internal bore having an entry opening and an exit opening, the entry opening of the internal bore formed adjacent to the counterbore recess, the counterbore recess formed at least partially in the top surface of the top wall and sized and shaped to accommodate a screw head, and the exit opening formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall;

the intervertebral cage including a first indentation on a first surface of the intervertebral cage and a second indentation on a second surface of the intervertebral cage; and

a tool comprising:

an elongate shaft having a first end and a second end; and

a gripper at the first end of the elongate shaft, the gripper comprising a first prong and a second prong,

wherein the first prong and the second prong are capable of respectively engaging the first indentation and the second indentation of the intervertebral cage.

34. (New) The implant system of claim 33, wherein the internal screw guide is a first internal screw guide having a first internal bore, and the intervertebral cage further comprises a second internal screw guide having a second internal bore configured to orient a screw in a different direction than the first internal bore, the implant assembly further comprising:

a first screw disposed in the first internal screw guide and at least partially within the intervertebral cage; and

a second screw disposed in the second internal screw guide and at least partially within the intervertebral cage; wherein each of the first internal screw guide and second internal screw guide is angled to bi-directionally orient the first screw and the second screw in opposite directions.

35. (New) The implant system of claim 34, the tool further comprising:

a screw guide for controlling a direction of the first screw and the second screw,

wherein the screw guide is positioned between the first prong and the second prong, and the screw guide is configured to be aligned with the first internal screw guide and the second internal screw guide when the first and second prongs are engaged with the first indentation and the second indentation of the intervertebral cage, the screw guide further configured to guide the first screw and the second screw through the screw guide and into the first internal screw guide and the second internal screw guide.

36. (New) The implant system of claim 34, wherein the first internal screw guide has a first angle with respect to the top wall of the intervertebral cage and the second internal screw guide has a second angle with respect to the top wall of the intervertebral cage, and wherein the first angle and the second angle extend through opposite sides of the intervertebral cage.

37. (New) A tool assembly comprising:

an intervertebral bone fusion spacer configured for insertion into a disc space between a first vertebral body and a second vertebral body and fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion, the intervertebral bone fusion spacer comprising:

an intervertebral cage including a first integral screw guide and a second integral screw guide; and

a first screw disposed in the first integral screw guide and at least partially within the intervertebral cage;

a second screw disposed in the second integral screw guide and at least partially within the intervertebral cage,

wherein a surface of each longitudinal end of the intervertebral cage includes a slot or indentation formed adjacent to an edge of an upper surface of the intervertebral cage for receiving a distal end of a prong of an implantation tool; and

a tool configured for manipulating and inserting the intervertebral bone fusion spacer into the disc space between the first vertebral body and the second vertebral body

to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion, the tool comprising:

a gripper having a plurality of prongs, wherein a distal end of each of the plurality of prongs is configured to engage a respective slot or indentation of the intervertebral cage; and

a screw guide for controlling a direction of the first screw and the second screw that are inserted into the first integral screw guide and the second integral screw guide, wherein the screw guide is positioned between the plurality of prongs.

38. (New) The tool assembly of claim 37, wherein the first integral screw guide and the second integral screw guide are angled relative to one another to bi-directionally orient the first screw and the second screw in different directions.

39. (New) The tool assembly of claim 38, wherein the screw guide includes a first integral trajectory guide configured to be aligned with the first integral screw guide, and a second integral trajectory configured to be aligned with the second integral screw guide.

40. (New) The tool assembly of claim 39, wherein the plurality of prongs engage the screw guide at one or more indentations on the screw guide and to position the screw guide in alignment with the first integral screw guide and the second integral screw guide of the intervertebral cage.

REMARKS

With this amendment, the title is amended and an amended cross-reference paragraph is added to the specification. No new matter is added.

With this amendment, claims 1-20 are cancelled and claims 21-40 are added. Support for these amendments can be found throughout the specification and figures, and no new matter is added. Applicant asks that all claims be examined in view of the amendment to the claims.

Applicant believes that no fees are due at this time. Please apply any necessary charges or credits to Deposit Account 06-1050, referencing the above attorney docket number.

Respectfully submitted,

Date: March 30, 2022

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Electronic Acknowledgement Receipt	
EFS ID:	45352369
Application Number:	17706873
International Application Number:	
Confirmation Number:	1103
Title of Invention:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION
First Named Inventor/Applicant Name:	Ahmnon D. Moskowitz
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		PrelimAmend.PDF	99734 a5871a83572c3df1eee32645b44f991e4803a600	yes	9

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Preliminary Amendment	1	1
	Specification	2	2
	Claims	3	8
	Applicant Arguments/Remarks Made in an Amendment	9	9
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New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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Information Disclosure Statement by Applicant (Use several sheets if necessary)		Applicant Moskowitz Family LLC	
(37 CFR §1.98(b))		Filing Date March 29, 2022	Group Art Unit Unknown

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Substitute Disclosure Form

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Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))		Applicant Moskowitz Family LLC	
		Filing Date March 29, 2022	Group Art Unit Unknown

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	328.	Guyer and Ohnmeiss, "Degenerative Disc Disease: Fusion Cages and Dowels," Lippincott Williams & Wilkins, Philadelphia, PA, 2004, Ch. 35, 12 pages, Exhibit No. 1013 in Case IPR2020-01303, U.S. Patent 10,307,268
	329.	Guyer and Ohnmeiss, "Degenerative Disc Disease: Fusion Cages and Dowels," Lippincott Williams & Wilkins, Philadelphia, PA, 2004, Ch. 35, 12 pages, Exhibit No. 1013 in Case IPR2020-01304, U.S. Patent 10,307,268
	330.	Guyer and Ohnmeiss, "Degenerative Disc Disease: Fusion Cages and Dowels," Lippincott Williams & Wilkins, Philadelphia, PA, 2004, Ch. 35, 12 pages, Exhibit No. 1013 in Case IPR2020-01305, U.S. Patent 10,478,319
	331.	Guyer and Ohnmeiss, "Degenerative Disc Disease: Fusion Cages and Dowels," Lippincott Williams & Wilkins, Philadelphia, PA, 2004, Ch. 35, 12 pages, Exhibit No. 1013 in Case IPR2020-01306, U.S. Patent 10,478,319
	332.	Guyer and Ohnmeiss, "Degenerative Disc Disease: Fusion Cages and Dowels," Lippincott Williams & Wilkins, Philadelphia, PA, 2004, Ch. 35, 12 pages, Exhibit No. 1013 in Case IPR2020-01307, U.S. Patent 8,353,913
	333.	Guyer and Ohnmeiss, "Degenerative Disc Disease: Fusion Cages and Dowels," Lippincott Williams & Wilkins, Philadelphia, PA, 2004, Ch. 35, 12 pages, Exhibit No. 1013 in Case IPR2020-01308, U.S. Patent 9,889,022
	334.	Holte et al., "Anterior lumbar fusion using a hybrid interbody graft," Eur. Spine J., 3:32-38, 1994, Exhibit No. 1014 in Case IPR2020-01303, U.S. Patent 10,307,268
	335.	Holte et al., "Anterior lumbar fusion using a hybrid interbody graft," Eur. Spine J., 3:32-38, 1994, Exhibit No. 1014 in Case IPR2020-01304, U.S. Patent 10,307,268
	336.	Holte et al., "Anterior lumbar fusion using a hybrid interbody graft," Eur. Spine J., 3:32-38, 1994, Exhibit No. 1014 in Case IPR2020-01305, U.S. Patent 10,478,319
	337.	Holte et al., "Anterior lumbar fusion using a hybrid interbody graft," Eur. Spine J., 3:32-38, 1994, Exhibit No. 1014 in Case IPR2020-01306, U.S. Patent 10,478,319
	338.	Holte et al., "Anterior lumbar fusion using a hybrid interbody graft," Eur. Spine J., 3:32-38, 1994, Exhibit No. 1014 in Case IPR2020-01307, U.S. Patent 8,353,913
	339.	Holte et al., "Anterior lumbar fusion using a hybrid interbody graft," Eur. Spine J., 3:32-38, 1994, Exhibit No. 1014 in Case IPR2020-01308, U.S. Patent 9,889,022
	340.	International Search Report (ISR) and Written Opinion of the International Searching Authority, 03 December 2007, International Application No. PCT/US 07/05005
	341.	International Search Report (ISR) and Written Opinion of the International Searching Authority, 09 July 2008, International Application No. PCT/US2007021013
	342.	International Search Report (ISR) and Written Opinion of the International Searching Authority, 21 May 2008, International Application No. PCT/US2007/021015
	343.	Lane et al., "Transperitoneal Approach to the Intervertebral Disc in the Lumbar Area," Annals of Surgery, March 1948, 127(3):537, Exhibit No. 1015 in Case IPR2020-01303, U.S. Patent 10,307,268
	344.	Lane et al., "Transperitoneal Approach to the Intervertebral Disc in the Lumbar Area," Annals of Surgery, March 1948, 127(3):537, Exhibit No. 1015 in Case IPR2020-01304, U.S. Patent 10,307,268
	345.	Lane et al., "Transperitoneal Approach to the Intervertebral Disc in the Lumbar Area," Annals of Surgery, March 1948, 127(3):537, Exhibit No. 1015 in Case IPR2020-01305, U.S. Patent 10,478,319

Examiner Signature	Date Considered

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Substitute Disclosure Form

Substitute Disclosure Form	U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No. 46440-0009017	Application No. 17/706,873
Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))		Applicant Moskowitz Family LLC	
		Filing Date March 29, 2022	Group Art Unit Unknown

Other Documents (include Author, Title, Date, and Place of Publication)		
Examiner Initial	Desig. ID	Document
	346.	Lane et al., "Transperitoneal Approach to the Intervertebral Disc in the Lumbar Area," Annals of Surgery, March 1948, 127(3):537, Exhibit No. 1015 in Case IPR2020-01306, U.S. Patent 10,478,319
	347.	Lane et al., "Transperitoneal Approach to the Intervertebral Disc in the Lumbar Area," Annals of Surgery, March 1948, 127(3):537, Exhibit No. 1015 in Case IPR2020-01307, U.S. Patent 8,353,913
	348.	Lane et al., "Transperitoneal Approach to the Intervertebral Disc in the Lumbar Area," Annals of Surgery, March 1948, 127(3):537, Exhibit No. 1015 in Case IPR2020-01308, U.S. Patent 9,889,022
	349.	Michelson et al., "BAK/C Interbody Fusion System: A Threaded Cylindrical Cage for Cervical Fusion," Thieme Medical Publisher, Inc., New York, New York, 2005, 10 pages, Exhibit No. 1016 in Case IPR2020-01303, U.S. Patent 10,307,268
	350.	Michelson et al., "BAK/C Interbody Fusion System: A Threaded Cylindrical Cage for Cervical Fusion," Thieme Medical Publisher, Inc., New York, New York, 2005, 10 pages, Exhibit No. 1016 in Case IPR2020-01304, U.S. Patent 10,307,268
	351.	Michelson et al., "BAK/C Interbody Fusion System: A Threaded Cylindrical Cage for Cervical Fusion," Thieme Medical Publisher, Inc., New York, New York, 2005, 10 pages, Exhibit No. 1016 in Case IPR2020-01305, U.S. Patent 10,478,319
	352.	Michelson et al., "BAK/C Interbody Fusion System: A Threaded Cylindrical Cage for Cervical Fusion," Thieme Medical Publisher, Inc., New York, New York, 2005, 10 pages, Exhibit No. 1016 in Case IPR2020-01306, U.S. Patent 10,478,319
	353.	Michelson et al., "BAK/C Interbody Fusion System: A Threaded Cylindrical Cage for Cervical Fusion," Thieme Medical Publisher, Inc., New York, New York, 2005, 10 pages, Exhibit No. 1016 in Case IPR2020-01307, U.S. Patent 8,353,913
	354.	Michelson et al., "BAK/C Interbody Fusion System: A Threaded Cylindrical Cage for Cervical Fusion," Thieme Medical Publisher, Inc., New York, New York, 2005, 10 pages, Exhibit No. 1016 in Case IPR2020-01308, U.S. Patent 9,889,022
	355.	Prpa et al., "Lumbar Interbody Cages," Sug. Pro., Ch. 41, pp. 489-502, 2005, Exhibit No. 1017 in Case IPR2020-01303, U.S. Patent 10,307,268
	356.	Prpa et al., "Lumbar Interbody Cages," Sug. Pro., Ch. 41, pp. 489-502, 2005, Exhibit No. 1017 in Case IPR2020-01304, U.S. Patent 10,307,268
	357.	Prpa et al., "Lumbar Interbody Cages," Sug. Pro., Ch. 41, pp. 489-502, 2005, Exhibit No. 1017 in Case IPR2020-01305, U.S. Patent 10,478,319
	358.	Prpa et al., "Lumbar Interbody Cages," Sug. Pro., Ch. 41, pp. 489-502, 2005, Exhibit No. 1017 in Case IPR2020-01306, U.S. Patent 10,478,319
	359.	Prpa et al., "Lumbar Interbody Cages," Sug. Pro., Ch. 41, pp. 489-502, 2005, Exhibit No. 1017 in Case IPR2020-01307, U.S. Patent 8,353,913
	360.	Prpa et al., "Lumbar Interbody Cages," Sug. Pro., Ch. 41, pp. 489-502, 2005, Exhibit No. 1017 in Case IPR2020-01308, U.S. Patent 9,889,022
	361.	Richard D. GUYER et al., "Intervertebral Disc Prostheses," SPINE JOURNAL, Volume 28, Number 15S, Supp. To 8/1/03, pages S15-S23
	362.	Ryu and Kim, "Cervical Carbon Fiber Interbody Fusion Cage: Bengal System," Thieme Medical Publisher, Inc., New York, New York, 2005, 8 pages, Exhibit No. 1018 in Case IPR2020-01303, U.S. Patent 10,307,268

Examiner Signature	Date Considered

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Substitute Disclosure Form

Substitute Disclosure Form U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney Docket No. 46440-0009017	Application No. 17/706,873
	Applicant Moskowitz Family LLC	
	Filing Date March 29, 2022	Group Art Unit Unknown

Other Documents (include Author, Title, Date, and Place of Publication)		
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	363.	Ryu and Kim, "Cervical Carbon Fiber Interbody Fusion Cage: Bengal System," Thieme Medical Publisher, Inc., New York, New York, 2005, 8 pages, Exhibit No. 1018 in Case IPR2020-01304, U.S. Patent 10,307,268
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	365.	Ryu and Kim, "Cervical Carbon Fiber Interbody Fusion Cage: Bengal System," Thieme Medical Publisher, Inc., New York, New York, 2005, 8 pages, Exhibit No. 1018 in Case IPR2020-01306, U.S. Patent 10,478,319
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	367.	Ryu and Kim, "Cervical Carbon Fiber Interbody Fusion Cage: Bengal System," Thieme Medical Publisher, Inc., New York, New York, 2005, 8 pages, Exhibit No. 1018 in Case IPR2020-01308, U.S. Patent 9,889,022
	368.	Schimmel et al., "PEEK Cages in Lumbar Fusion," Clin. Spine Surg., 29(5):E252-E258, June 2016, Exhibit No. 1019 in Case IPR2020-01303, U.S. Patent 10,307,268
	369.	Schimmel et al., "PEEK Cages in Lumbar Fusion," Clin. Spine Surg., 29(5):E252-E258, June 2016, Exhibit No. 1019 in Case IPR2020-01304, U.S. Patent 10,307,268
	370.	Schimmel et al., "PEEK Cages in Lumbar Fusion," Clin. Spine Surg., 29(5):E252-E258, June 2016, Exhibit No. 1019 in Case IPR2020-01305, U.S. Patent 10,478,319
	371.	Schimmel et al., "PEEK Cages in Lumbar Fusion," Clin. Spine Surg., 29(5):E252-E258, June 2016, Exhibit No. 1019 in Case IPR2020-01306, U.S. Patent 10,478,319
	372.	Schimmel et al., "PEEK Cages in Lumbar Fusion," Clin. Spine Surg., 29(5):E252-E258, June 2016, Exhibit No. 1019 in Case IPR2020-01307, U.S. Patent 8,353,913
	373.	Schimmel et al., "PEEK Cages in Lumbar Fusion," Clin. Spine Surg., 29(5):E252-E258, June 2016, Exhibit No. 1019 in Case IPR2020-01308, U.S. Patent 9,889,022
	374.	Synfix, "EVOLUTION System," Online Product, DATE, 1 page, Exhibit No. 1021 in Case IPR2020-01303, U.S. Patent 10,307,268
	375.	Synfix, "EVOLUTION System," Online Product, DATE, 1 page, Exhibit No. 1021 in Case IPR2020-01304, U.S. Patent 10,307,268
	376.	Synfix, "EVOLUTION System," Online Product, DATE, 1 page, Exhibit No. 1021 in Case IPR2020-01305, U.S. Patent 10,478,319
	377.	Synfix, "EVOLUTION System," Online Product, DATE, 1 page, Exhibit No. 1021 in Case IPR2020-01306, U.S. Patent 10,478,319
	378.	Synfix, "EVOLUTION System," Online Product, DATE, 1 page, Exhibit No. 1021 in Case IPR2020-01307, U.S. Patent 8,353,913
	379.	Synfix, "EVOLUTION System," Online Product, DATE, 1 page, Exhibit No. 1021 in Case IPR2020-01308, U.S. Patent 9,889,022
	380.	Synthes "SynFix-LR. Implant and instrumentation for stand alone anterior lumbar interbody fusion (ALIF)," 2006, 26 pages, Exhibit No. 1020 in Case IPR2020-01303, U.S. Patent 10,307,268

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Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))		Applicant Moskowitz Family LLC	
		Filing Date March 29, 2022	Group Art Unit Unknown

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Examiner Initial	Desig. ID	Document
	381.	Synthes "SynFix-LR. Implant and instrumentation for stand alone anterior lumbar interbody fusion (ALIF)," 2006, 26 pages, Exhibit No. 1020 in Case IPR2020-01304, U.S. Patent 10,307,268
	382.	Synthes "SynFix-LR. Implant and instrumentation for stand alone anterior lumbar interbody fusion (ALIF)," 2006, 26 pages, Exhibit No. 1020 in Case IPR2020-01305, U.S. Patent 10,478,319
	383.	Synthes "SynFix-LR. Implant and instrumentation for stand alone anterior lumbar interbody fusion (ALIF)," 2006, 26 pages, Exhibit No. 1020 in Case IPR2020-01306, U.S. Patent 10,478,319
	384.	Synthes "SynFix-LR. Implant and instrumentation for stand alone anterior lumbar interbody fusion (ALIF)," 2006, 26 pages, Exhibit No. 1020 in Case IPR2020-01307, U.S. Patent 8,353,913
	385.	Synthes "SynFix-LR. Implant and instrumentation for stand alone anterior lumbar interbody fusion (ALIF)," 2006, 26 pages, Exhibit No. 1020 in Case IPR2020-01308, U.S. Patent 9,889,022
	386.	Vincent C. TRAYNELIS, "Prosthetics and Biologics: The Wave of the Future," CLINICAL NEUROSURGERY, Volume 50, Proceedings of the Congress of Neurological Surgeons, Philadelphia, PA 2002, Chapter 9, pages 207-219
	387.	Wagner et al., "Surgical Stabilization of the Equine Cervical Spine," Veterinary Surg., 8:1-6, January-March 1979, Exhibit No. 1023 in Case IPR2020-01303, U.S. Patent 10,307,268
	388.	Wagner et al., "Surgical Stabilization of the Equine Cervical Spine," Veterinary Surg., 8:1-6, January-March 1979, Exhibit No. 1023 in Case IPR2020-01304, U.S. Patent 10,307,268
	389.	Wagner et al., "Surgical Stabilization of the Equine Cervical Spine," Veterinary Surg., 8:1-6, January-March 1979, Exhibit No. 1023 in Case IPR2020-01305, U.S. Patent 10,478,319
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	392.	Wagner et al., "Surgical Stabilization of the Equine Cervical Spine," Veterinary Surg., 8:1-6, January-March 1979, Exhibit No. 1023 in Case IPR2020-01308, U.S. Patent 9,889,022
	393.	Weiner and Fraser, "Spine Update Lumbar Interbody Cages," Spine, 23(5):634-640, 1998, Exhibit No. 1024 in Case IPR2020-01303, U.S. Patent 10,307,268
	394.	Weiner and Fraser, "Spine Update Lumbar Interbody Cages," Spine, 23(5):634-640, 1998, Exhibit No. 1024 in Case IPR2020-01304, U.S. Patent 10,307,268
	395.	Weiner and Fraser, "Spine Update Lumbar Interbody Cages," Spine, 23(5):634-640, 1998, Exhibit No. 1024 in Case IPR2020-01305, U.S. Patent 10,478,319
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	397.	Weiner and Fraser, "Spine Update Lumbar Interbody Cages," Spine, 23(5):634-640, 1998, Exhibit No. 1024 in Case IPR2020-01307, U.S. Patent 8,353,913
	398.	Weiner and Fraser, "Spine Update Lumbar Interbody Cages," Spine, 23(5):634-640, 1998, Exhibit No. 1024 in Case IPR2020-01308, U.S. Patent 9,889,022
	399.	Wilke et al., "Primary stabilizing effect of interbody fusion devices for the cervical spine: an in vitro comparison between three different cage types and bone cement," Eur. Spine J., 2000, 9:410-416, Exhibit No. 1025 in Case IPR2020-01303, U.S. Patent 10,307,268

Examiner Signature	Date Considered

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Substitute Disclosure Form

Substitute Disclosure Form	U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No. 46440-0009017	Application No. 17/706,873
Information Disclosure Statement by Applicant (Use several sheets if necessary)		Applicant Moskowitz Family LLC	
(37 CFR §1.98(b))		Filing Date March 29, 2022	Group Art Unit Unknown

Other Documents (include Author, Title, Date, and Place of Publication)		
Examiner Initial	Desig. ID	Document
	400.	Wilke et al., "Primary stabilizing effect of interbody fusion devices for the cervical spine: an in vitro comparison between three different cage types and bone cement," Eur. Spine J., 2000, 9:410-416, Exhibit No. 1025 in Case IPR2020-01304, U.S. Patent 10,307,268
	401.	Wilke et al., "Primary stabilizing effect of interbody fusion devices for the cervical spine: an in vitro comparison between three different cage types and bone cement," Eur. Spine J., 2000, 9:410-416, Exhibit No. 1025 in Case IPR2020-01305, U.S. Patent 10,478,319
	402.	Wilke et al., "Primary stabilizing effect of interbody fusion devices for the cervical spine: an in vitro comparison between three different cage types and bone cement," Eur. Spine J., 2000, 9:410-416, Exhibit No. 1025 in Case IPR2020-01306, U.S. Patent 10,478,319
	403.	Wilke et al., "Primary stabilizing effect of interbody fusion devices for the cervical spine: an in vitro comparison between three different cage types and bone cement," Eur. Spine J., 2000, 9:410-416, Exhibit No. 1025 in Case IPR2020-01307, U.S. Patent 8,353,913
	404.	Wilke et al., "Primary stabilizing effect of interbody fusion devices for the cervical spine: an in vitro comparison between three different cage types and bone cement," Eur. Spine J., 2000, 9:410-416, Exhibit No. 1025 in Case IPR2020-01308, U.S. Patent 9,889,022
	405.	Wiseman et al., "Posterior Lumbar Interbody Fusion," Surgical Procedures, Ch. 39, 24 pages, Exhibit No. 1026 in Case IPR2020-01303, U.S. Patent 10,307,268
	406.	Wiseman et al., "Posterior Lumbar Interbody Fusion," Surgical Procedures, Ch. 39, 24 pages, Exhibit No. 1026 in Case IPR2020-01304, U.S. Patent 10,307,268
	407.	Wiseman et al., "Posterior Lumbar Interbody Fusion," Surgical Procedures, Ch. 39, 24 pages, Exhibit No. 1026 in Case IPR2020-01305, U.S. Patent 10,478,319
	408.	Wiseman et al., "Posterior Lumbar Interbody Fusion," Surgical Procedures, Ch. 39, 24 pages, Exhibit No. 1026 in Case IPR2020-01306, U.S. Patent 10,478,319
	409.	Wiseman et al., "Posterior Lumbar Interbody Fusion," Surgical Procedures, Ch. 39, 24 pages, Exhibit No. 1026 in Case IPR2020-01307, U.S. Patent 8,353,913
	410.	Wiseman et al., "Posterior Lumbar Interbody Fusion," Surgical Procedures, Ch. 39, 24 pages, Exhibit No. 1026 in Case IPR2020-01308, U.S. Patent 9,889,022

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Substitute Disclosure Form

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	:	Ahmnon D. Moskowitz	Art Unit	:	Unknown
Application No.	:	17/706,873	Examiner	:	Unknown
Filed	:	March 29, 2022	Conf. No.	:	1103
Title	:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION			

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Please consider the documents listed on the disclosure form submitted with this statement. Copies of the documents are being submitted with this statement to the extent required under 37 C.F.R. § 1.98(a)(2).

Under 35 U.S.C. § 120, this application relies on the earlier filing date of application number 16/744,755, filed on January 16, 2020. All listed documents were submitted to and/or cited by the Office in the prior application, and so copies of those documents are not provided in this application.

This statement is being filed within three months of the filing date of the application or before the receipt of a first action on the merits.

Apply any necessary charges or credits applicable under 37 C.F.R. § 1.17(p) to deposit account 06-1050, referencing the above attorney docket number.

Please contact the undersigned if there are any questions regarding this statement.

Respectfully submitted,

Date: April 4, 2022

/Kiersten M. Batzli/
Kiersten M. Batzli, Reg. No. 75,476

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Electronic Acknowledgement Receipt

EFS ID:	45391439
Application Number:	17706873
International Application Number:	
Confirmation Number:	1103
Title of Invention:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION
First Named Inventor/Applicant Name:	Ahmnon D. Moskowitz
Customer Number:	26191
Filer:	Kiersten M. Batzli/Callie Benge
Filer Authorized By:	Kiersten M. Batzli
Attorney Docket Number:	46440-0009017
Receipt Date:	04-APR-2022
Filing Date:	29-MAR-2022
Time Stamp:	17:28:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	IDS.pdf	292180 e488d7fa870c812c9c125f481c6f06d2ac96987c	no	20

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/706,873

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	80		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	350		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	400		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*	x 50 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 240 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	830		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/706,873	03/29/2022		830	46440-0009017	20	3

CONFIRMATION NO. 1103

FILING RECEIPT

26191
FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

OC000000132905563

Date Mailed: 04/05/2022

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Ahmnon D. Moskowitz, Rockville, MD;
Pablo A. Valdivia Y. Alvarado, Cambridge, MA;
Mosheh T. Moskowitz, Rockville, MD;
Nathan C. Moskowitz, Rockville, MD;

Applicant(s)

Moskowitz Family LLC, Rockville, MD;

Power of Attorney: The patent practitioners associated with Customer Number 26191

Domestic Priority data as claimed by applicant

This application is a CON of 16/744,755 01/16/2020
which is a CON of 15/944,117 04/03/2018 PAT 10537442
which is a CON of 15/894,471 02/12/2018 PAT 10390969
which is a CON of 13/210,157 08/15/2011 PAT 9889022
which is a CON of 13/084,543 04/11/2011 PAT 8353913
and is a CON of 13/108,982 05/16/2011 PAT 9005293
and said 13/084,543 04/11/2011
is a CON of 11/842,855 08/21/2007 PAT 7942903
and said 13/108,982 05/16/2011
is a CON of 11/842,855 08/21/2007 PAT 7942903
which is a CIP of 11/536,815 09/29/2006 PAT 7846188 *
which is a CIP of 11/208,644 08/23/2005 PAT 7704279
which claims benefit of 60/670,231 04/12/2005

(*)Data provided by applicant is not consistent with PTO records.

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/01/2022

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/706,873**

Projected Publication Date: 07/14/2022

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION

Preliminary Class

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application

serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

26191 7590 05/10/2022

FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
CENTRAL, DOCKET	

ART UNIT	PAPER NUMBER
3773	

NOTIFICATION DATE	DELIVERY MODE
05/10/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Decision Granting Request for Prioritized Examination (Track I)	**Application No.** 17/706,873	**Applicant(s)** Moskowitz et al.	
	Examiner CHERYL P GIBSON BAYLOR	**Art Unit** OPET	**AIA (FITF) Status** No

1. THE REQUEST FILED 29 March 2022 IS **GRANTED** .

The above-identified application has met the requirements for prioritized examination

A. ☑ for an original nonprovisional application (Track I).
B. ☐ for an application undergoing continued examination (RCE).

2. **The above-identified application will undergo prioritized examination**. The application will be accorded special status throughout its entire course of prosecution until one of the following occurs:

A. filing a **petition for extension of time** to extend the time period for filing a reply;

B. filing an **amendment to amend the application to contain more than four independent claims, more than thirty total claims** , or a multiple dependent claim;

C. filing a **request for continued examination** ;

D. filing a notice of appeal;

E. filing a request for suspension of action;

F. mailing of a notice of allowance;

G. mailing of a final Office action;

H. completion of examination as defined in 37 CFR 41.102; or

I. abandonment of the application.

Telephone inquiries with regard to this decision should be directed to CHERYL GIBSON BAYLOR at (571)272-3213. In his/her absence, calls may be directed to Petition Help Desk at (571) 272-3282.

/CHERYL GIBSON BAYLOR/ Paralegal Specialist, OPET	

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

26191 7590 05/31/2022

FISH & RICHARDSON P.C. (TC)
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EXAMINER	
HAMMOND, ELLEN CHRISTINA	

ART UNIT	PAPER NUMBER
3773	

NOTIFICATION DATE	DELIVERY MODE
05/31/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No. 17/706,873	Applicant(s) Moskowitz et al.	
	Examiner ELLEN C HAMMOND	Art Unit 3773	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 03/30/2022.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 21-40 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☐ Claim(s) _____ is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☑ Claim(s) 21-40 are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Election/Restriction

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 21-36, drawn to an implant and an implant system, classified in A61F2/447.

II. Claims 37-40, drawn to a tool assembly, classified in A61F2/4611.

The inventions are independent or distinct, each from the other because:

Inventions II and I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the subcombination includes the recitation that the entry of the internal bore is formed only in the top surface of the top wall, and that the counterbore recess is formed at least partially in the top surface of the top wall and sized and shaped to accommodate a screw head. The subcombination has separate utility such as securing two pieces of wood together.

The examiner has required restriction between combination and subcombination inventions. Where applicant elects a subcombination, and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Restriction for examination purposes as indicated is proper because all the inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and/or examination burden if restriction were not required because one or more of the following reasons apply:

Each invention has attained recognition in the art as a separate subject for inventive effort, and also a separate field of search as evidenced by the separate classification thereof.

This application contains claims directed to the following patentably distinct species:

Species 1, shown in Figs. 1A-1E (Expandable screw box);

Species 2, shown in Figs. 2A-C (Non-expandable screw box);

Species 3, shown in Fig. 3 (including one BDFT screw)

Upon the election of Species 2, a further election is required:

Sub-species a, shown in Fig. 4A-4B (including mini-plate)

Sub-species b, shown in Fig. 4C (including cage)

The species are independent or distinct as described above. In addition, these species are not obvious variants of each other based on the current record.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species, or a single grouping of patentably indistinct species, for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claims appear to be generic.

There is a search and/or examination burden for the patentably distinct species as set forth above because at least the following reason(s) apply:

A different field of search is required for each species, i.e., it is necessary to search for one of the species in a manner that is not likely to result in finding art pertinent to the other species (e.g., searching different classes/subclasses or electronic resources, or employing different search queries).

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species to be examined even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected species or grouping of patentably indistinct species**, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

The election may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the election of species requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected species or grouping of patentably indistinct species.

Should applicant traverse on the ground that the species, or groupings of patentably indistinct species from which election is required, are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing them to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the species unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103 or pre-AIA 35 U.S.C. 103(a) of the other species.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of an invention to be examined even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected invention**.

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103 or pre-AIA 35 U.S.C. 103(a) of the other invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be corrected in compliance with 37 CFR 1.48(a) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. A request to correct inventorship under 37 CFR 1.48(a) must be accompanied by an application data sheet in accordance with 37 CFR 1.76 that identifies each inventor by his or her legal name and by the processing fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELLEN HAMMOND whose telephone number is (571)270-3819. The examiner can normally be reached Monday-Friday 8 - 4 PM .

If attempts to reach the examiner by telephone are unsuccessful, ***please contact*** **the examiner's supervisor, Eduardo C. Robert, *at* 571 272-4719**. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ELLEN C HAMMOND/
Primary Examiner, Art Unit 3773

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	:	Ahmnon D. Moskowitz	Art Unit	:	3773
Application No.	:	17/706,873	Examiner	:	Ellen Christina Hammond
Filed	:	March 29, 2022	Conf. No.	:	1103
Title	:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION			

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY TO RESTRICTION REQUIREMENT

In response to the restriction requirement made in the action dated May 31, 2022, please consider the following amendment and election.

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims.

1-20. (Cancelled)

21. (Previously Presented) An intervertebral implant comprising:

an intervertebral cage including:

a top wall including a top surface and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall define an open space capable of receiving bone filling for biological bone fusion; and

an internal screw guide having an internal bore and a counterbore recess, the internal bore having an entry opening and an exit opening, the entry opening of the internal bore formed at a juncture between the internal bore and the counterbore recess, the entry opening of the internal bore formed only in the top surface of the top wall, the counterbore recess formed at least partially in the top surface of the top wall and sized and shaped to accommodate a screw head, and the exit opening formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall.

22. (Previously Presented) The intervertebral implant of claim 21, wherein the internal bore is coaxial with the counterbore recess.

23. (Previously Presented) The intervertebral implant of claim 22, wherein the internal screw guide extends through an entire depth of the top wall from the top surface to the bottom surface and exiting at least partially into the open space.

24. (Previously Presented) The intervertebral implant of claim 23, wherein the intervertebral implant is configured to be inserted into a disc space between a first vertebral body and a second vertebral body and to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion.

25. (Previously Presented) The intervertebral implant of claim 24, wherein each of the first sidewall and the second sidewall has a surface configured to contact one of the first vertebral body and a second vertebral body when the intervertebral cage is inserted into the disc space.

26. (Previously Presented) The intervertebral implant of claim 25, wherein the surfaces of the first sidewall and the second sidewall include surface features for contacting the first vertebral body and a second vertebral body.

27. (Previously Presented) The intervertebral implant of claim 26, wherein the surface features include a plurality of ridges.

28. (Previously Presented) The intervertebral implant of claim 21, wherein the side surface of the top wall is patterned with a plurality of surface features to create a rough side surface.

29. (Previously Presented) The intervertebral implant of claim 21, the intervertebral cage including a first indentation on the first sidewall of the intervertebral cage and a second indentation on the second sidewall of the intervertebral cage.

30. (Previously Presented) The intervertebral implant of claim 21, wherein the internal screw guide is a first internal screw guide, and the intervertebral cage further comprises:

at least a second internal screw guide having a second internal bore with a second entry opening and a second exit opening, the second entry opening formed within a

second counterbore recess and oriented in a different direction than the internal bore of the first internal screw guide.

31. (Previously Presented) The intervertebral implant of claim 21, further comprising:

a threaded hole extending through the top wall in a direction substantially normal to the top surface of the top wall with a diameter of the threaded hole being smaller than a diameter of the internal screw guide, and

a rectangular indentation extending into at least part of the top wall and is oriented with at least one side of the rectangular indentation being substantially parallel to the side surface of the top wall.

32. (Previously Presented) The intervertebral implant of claim 21, further comprising:

a first slot on a first outer surface of the first sidewall;

a second slot on a second outer surface of the second sidewall, wherein the second slot is positioned opposite of the first slot;

a first circular side hole extending into the first outer surface of the first sidewall;

a second circular side hole extending into the second outer surface of the second sidewall, wherein the second circular side hole is positioned opposite of the first circular side hole,

wherein the first slot and the first circular side hole are both positioned along a first centerline axis that bisects the first sidewall, and

wherein the second slot and the second circular side hole are both positioned along a second centerline axis that bisects the second sidewall.

33. (Previously Presented) An implant system comprising:

an intervertebral cage including:

a top wall including a top surface and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall define an open space capable of receiving bone filling for biological bone fusion; and

an internal screw guide having an internal bore and a counterbore recess, the internal bore having an entry opening and an exit opening, the entry opening of the internal bore formed adjacent to the counterbore recess, the counterbore recess formed at least partially in the top surface of the top wall and sized and shaped to accommodate a screw head, and the exit opening formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall;

the intervertebral cage including a first indentation on a first surface of the intervertebral cage and a second indentation on a second surface of the intervertebral cage; and

a tool comprising:

an elongate shaft having a first end and a second end; and

a gripper at the first end of the elongate shaft, the gripper comprising a first prong and a second prong,

wherein the first prong and the second prong are capable of respectively engaging the first indentation and the second indentation of the intervertebral cage.

34. (Previously Presented) The implant system of claim 33, wherein the internal screw guide is a first internal screw guide having a first internal bore, and the intervertebral cage further comprises a second internal screw guide having a second internal bore configured to orient a screw in a different direction than the first internal bore, the implant assembly further comprising:

a first screw disposed in the first internal screw guide and at least partially within the intervertebral cage; and

a second screw disposed in the second internal screw guide and at least partially within the intervertebral cage; wherein each of the first internal screw guide and second internal screw guide is angled to bi-directionally orient the first screw and the second screw in opposite directions.

35. (Previously Presented) The implant system of claim 34, the tool further comprising:

a screw guide for controlling a direction of the first screw and the second screw, wherein the screw guide is positioned between the first prong and the second prong, and the screw guide is configured to be aligned with the first internal screw guide and the second internal screw guide when the first and second prongs are engaged with the first indentation and the second indentation of the intervertebral cage, the screw guide further configured to guide the first screw and the second screw through the screw guide and into the first internal screw guide and the second internal screw guide.

36. (Previously Presented) The implant system of claim 34, wherein the first internal screw guide has a first angle with respect to the top wall of the intervertebral cage and the second internal screw guide has a second angle with respect to the top wall of the intervertebral cage, and wherein the first angle and the second angle extend through opposite sides of the intervertebral cage.

37-40. (Cancelled).

41. (New) The intervertebral implant of claim 21, wherein the side surface of the top wall and a side surface of the bottom wall are each patterned with a plurality of surface features to create a rough side surface of the intervertebral cage.

42. (New) The intervertebral implant of claim 41, wherein at least some of the plurality of surface features are positioned on the side surface of the top wall closer to the top surface of the top wall than the exit opening.

43. (New) The intervertebral implant of claim 42, wherein the plurality of surface features are ridges extending from the side surface of the top wall and the side surface of the bottom wall, the ridges positioned around the open space capable of receiving bone filling for biological bone fusion.

44. (New) The intervertebral implant of claim 21, wherein the first sidewall and the second sidewall include features configured to promote bone fusion.

REMARKS

With this amendment, claims 37-40 are cancelled. New claims 41-44 are added. The amendments and new claims are supported by the specification as originally filed, and no new matter is added.

In response to the restriction requirement made in the action dated May 31, 2022, identified Invention 1, Species 2 and Sub-species 2B (encompassing claims 21-36 and new claims 41-44) are elected for examination. The election is made without traverse.

Please apply any necessary charges or credits to Deposit Account No. 06-1050, referencing the above attorney docket number.

Respectfully submitted,

Date: July 7, 2022

/Kiersten M. Batzli/
Kiersten M. Batzli, Reg. No. 75,476

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100688422.doc

Electronic Acknowledgement Receipt	
EFS ID:	46138379
Application Number:	17706873
International Application Number:	
Confirmation Number:	1103
Title of Invention:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION
First Named Inventor/Applicant Name:	Ahmnon D. Moskowitz
Customer Number:	26191
Filer:	Kiersten M. Batzli/Emily Whitcomb
Filer Authorized By:	Kiersten M. Batzli
Attorney Docket Number:	46440-0009017
Receipt Date:	07-JUL-2022
Filing Date:	29-MAR-2022
Time Stamp:	16:39:54
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		RRResponse.PDF	94752 d8b1a3a2ae799ee22a1136efe16771f3cf564fd0	yes	8

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response to Election / Restriction Filed	1	1
	Claims	2	7
	Abstract	8	8
Warnings:			
Information:			
	Total Files Size (in bytes):	94752	

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017

CONFIRMATION NO. 1103

26191
FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

PUBLICATION NOTICE



Title:BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION

Publication No.US-2022-0218498-A1
Publication Date:07/14/2022

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently https://portal.uspto.gov/pair/PublicPair. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

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Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

26191 7590 08/02/2022

FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
HAMMOND, ELLEN CHRISTINA	

ART UNIT	PAPER NUMBER
3773	

NOTIFICATION DATE	DELIVERY MODE
08/02/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR/ PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
17/706,873	03/29/2022	Moskowitz et al.	46440-0009017

	EXAMINER	
FISH & RICHARDSON P.C. (TC) PO BOX 1022 MINNEAPOLIS, MN 55440-1022	ELLEN C HAMMOND	
	ART UNIT	PAPER
	3773	20220728

DATE MAILED: _____

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

The reply filed on July 7, 2022 is not fully responsive to the requirement for Restriction/Election mailed on 5/31/2022 because of the following omission(s) or matter(s): Applicant elected Invention I, Species 2 and Sub-species 2B, shown in Figs. 2A-C and 4C. Fig. 4C illustrates an intervertebral cage. The intervertebral cage of Fig. 4C does not include "an internal screw guide having an internal bore and a counterbore recess (the specification does not even disclose or identify a counterbore), the internal bore having an entry opening and an exit opening, the entry opening of the internal bore formed at a juncture between the internal bore and the counterbore recess, the entry opening of the internal bore formed only in the top surface of the top wall, the counterbore recess formed at least partially in the top surface of the top wall and sized and shaped to accommodate a screw head, and the exit opening formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall" as recited in claims 21 and 33. Accordingly, none of the claims read on the elected embodiment. Since the above-mentioned reply appears to be bona-fide, applicant is given ONE (1) MONTH or THIRTY (30) DAYS from the mailing date of this notice, whichever is longer, within which to supply the omission or correction to avoid abandonment. EXTENSIONS OF TIME MAY BE GRANTED UNDER 37 CFR 1.136(a)
.

/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	

PTO-90C (Rev.04-03)

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

26191 7590 08/17/2022

FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
HAMMOND, ELLEN CHRISTINA	

ART UNIT	PAPER NUMBER
3773	

NOTIFICATION DATE	DELIVERY MODE
08/17/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

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Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Applicant-Initiated Interview Summary	Application No. 17/706,873	Applicant(s) Moskowitz et al.		
	Examiner ELLEN C HAMMOND	Art Unit 3773	AIA (First Inventor to File) Status No	Page 1 of 2

All Participants (applicant, applicants representative, PTO personnel)	Title	Type
ELLEN C HAMMOND	Primary Examiner	Telephonic
Kiersten Batzli	Attorney	

Date of Interview: 12 August 2022

Issues Discussed:

Election/Restriction

The claims do not read on the elected species. The claims also do not read on any figure included in the Drawings or embodiment described in the specification.

Other

The examiner discussed the claimed structure of the cage and the screw boxes. The claimed counterbore recess is not supported. Additionally, it was unclear how the counterbore only partially resides in the top surface when the internal bore (claimed as formed at a juncture between the internal bore and the counterbore recess) has an entry opening that is formed only in the top surface of the top wall. Additionally, the exit opening is not formed in a side surface of the top wall. It appears that claim one attempts to combine the structure of the opening in the cage and the opening in the screw box as one opening. This language adds confusion because the claim positively recites the top wall as including both the structure of the top wall opening and the screw box opening. Applicant intends to amend the claim. The examiner invites another interview if it would be helpful prior to filing formal amendments.

/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general

indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/706,873	Filing Date 03/29/2022	☐ To be Mailed

ENTITY: ☐ LARGE ☑ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $240 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT	08/25/2022	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0		x $50 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $240 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	SLIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/PATIENCE RESPER/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	:	Ahmnon D. Moskowitz	Art Unit	:	3773
Application No.	:	17/706,873	Examiner	:	Ellen Christina Hammond
Filed	:	March 29, 2022	Conf. No.	:	1103
Title	:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION			

Mail Stop Amendment
Commissioner for Patents
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Alexandria, VA 22313-1450

REPLY TO RESTRICTION REQUIREMENT AND NOTICE OF NON-COMPLIANT RESPONSE

In response to the restriction requirement made in the action dated May 31, 2022 and the Notice of Non-Compliant Response dated August 2, 2022, please consider the following amendment and election.

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims.

1-20. (Cancelled)

21. (Currently Amended) An intervertebral implant comprising:

~~an intervertebral cage including:~~

a top wall including a top surface and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall define an open space capable of receiving bone filling for biological bone fusion; and

an internal screw guide having an internal bore and a ~~counterbore~~ recess extending into the top surface of the top wall, the internal bore having an entry opening and an exit opening, the entry opening of the internal bore formed at a juncture between the internal bore and the ~~counterbore~~ recess, the entry opening of the internal bore formed only in the top surface of the top wall, the ~~counterbore~~ recess ~~formed at least partially in the top surface of the top wall and~~ sized and shaped to accommodate a screw head, and the exit opening formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall.

22. (Currently Amended) The intervertebral implant of claim 21, wherein the internal bore is coaxial with the ~~counterbore~~ recess.

23. (Previously Presented) The intervertebral implant of claim 22, wherein the internal screw guide extends through an entire depth of the top wall from the top surface to the bottom surface and exiting at least partially into the open space.

24. (Previously Presented) The intervertebral implant of claim 23, wherein the intervertebral implant is configured to be inserted into a disc space between a first vertebral body and a second vertebral body and to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion.

25. (Currently Amended) The intervertebral implant of claim 24, wherein each of the first sidewall and the second sidewall has a surface configured to contact one of the first vertebral body and a second vertebral body when the intervertebral implant ~~cage~~ is inserted into the disc space.

26. (Previously Presented) The intervertebral implant of claim 25, wherein the surfaces of the first sidewall and the second sidewall include surface features for contacting the first vertebral body and a second vertebral body.

27. (Previously Presented) The intervertebral implant of claim 26, wherein the surface features include a plurality of ridges.

28. (Previously Presented) The intervertebral implant of claim 21, wherein the side surface of the top wall is patterned with a plurality of surface features to create a rough side surface.

29. (Currently Amended) The intervertebral implant of claim 21, the intervertebral implant ~~cage~~ including a first indentation on the first sidewall of the intervertebral implant ~~cage~~ and a second indentation on the second sidewall of the intervertebral implant ~~cage~~.

30. (Currently Amended) The intervertebral implant of claim 21, wherein the internal screw guide is a first internal screw guide, and the intervertebral implant ~~cage~~ further comprises:

at least a second internal screw guide having a second internal bore with a second entry opening and a second exit opening, the second entry opening formed within a second ~~counterbore~~ recess formed in the top wall and extending into the top surface of the top wall and oriented in a different direction than the internal bore of the first internal screw guide.

31. (Previously Presented) The intervertebral implant of claim 21, further comprising:

a threaded hole extending through the top wall in a direction substantially normal to the top surface of the top wall with a diameter of the threaded hole being smaller than a diameter of the internal screw guide, and

a rectangular indentation extending into at least part of the top wall and is oriented with at least one side of the rectangular indentation being substantially parallel to the side surface of the top wall.

32. (Previously Presented) The intervertebral implant of claim 21, further comprising:

a first slot on a first outer surface of the first sidewall;

a second slot on a second outer surface of the second sidewall, wherein the second slot is positioned opposite of the first slot;

a first circular side hole extending into the first outer surface of the first sidewall;

a second circular side hole extending into the second outer surface of the second sidewall, wherein the second circular side hole is positioned opposite of the first circular side hole,

wherein the first slot and the first circular side hole are both positioned along a first centerline axis that bisects the first sidewall, and

wherein the second slot and the second circular side hole are both positioned along a second centerline axis that bisects the second sidewall.

33. (Currently Amended) An implant system comprising:

~~an intervertebral cage including:~~

a top wall including a top surface and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall define an open space capable of receiving bone filling for biological bone fusion; and

an internal screw guide having an internal bore and a ~~counterbore~~ recess extending into the top surface of the top wall, the internal bore having an entry opening and an exit opening, the entry opening of the internal bore formed adjacent to the ~~counterbore~~ recess, the ~~counterbore~~ recess ~~formed at least partially in the top surface of the top wall and~~ sized and shaped to accommodate a screw head, and the exit opening formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall;

the intervertebral implant ~~cage~~ including a first indentation on a first surface of the intervertebral implant ~~cage~~ and a second indentation on a second surface of the intervertebral implant ~~cage~~; and

a tool comprising:

an elongate shaft having a first end and a second end; and

a gripper at the first end of the elongate shaft, the gripper comprising a first prong and a second prong,

wherein the first prong and the second prong are capable of respectively engaging the first indentation and the second indentation of the intervertebral implant ~~cage~~.

34. (Currently Amended) The implant system of claim 33, wherein the internal screw guide is a first internal screw guide having a first internal bore, and the intervertebral implant ~~cage~~ further comprises a second internal screw guide having a second internal bore

configured to orient a screw in a different direction than the first internal bore, the implant assembly further comprising:

a first screw disposed in the first internal screw guide and at least partially within the intervertebral implant ~~cage~~; and

a second screw disposed in the second internal screw guide and at least partially within the intervertebral implant ~~cage~~; wherein each of the first internal screw guide and second internal screw guide is angled to bi-directionally orient the first screw and the second screw in opposite directions.

35. (Currently Amended) The implant system of claim 34, the tool further comprising:

a screw guide for controlling a direction of the first screw and the second screw, wherein the screw guide is positioned between the first prong and the second prong, and the screw guide is configured to be aligned with the first internal screw guide and the second internal screw guide when the first and second prongs are engaged with the first indentation and the second indentation of the intervertebral implant ~~cage~~, the screw guide further configured to guide the first screw and the second screw through the screw guide and into the first internal screw guide and the second internal screw guide.

36. (Currently Amended) The implant system of claim 34, wherein the first internal screw guide has a first angle with respect to the top wall of the intervertebral implant ~~cage~~ and the second internal screw guide has a second angle with respect to the top wall of the intervertebral implant ~~cage~~, and wherein the first angle and the second angle extend through opposite sides of the intervertebral implant ~~cage~~.

37-40. (Cancelled).

41. (New) The intervertebral implant of claim 21, wherein the side surface of the top wall and a side surface of the bottom wall are each patterned with a plurality of surface features to create a rough side surface of the intervertebral cage.

42. (New) The intervertebral implant of claim 41, wherein at least some of the plurality of surface features are positioned on the side surface of the top wall closer to the top surface of the top wall than the exit opening.

43. (New) The intervertebral implant of claim 42, wherein the plurality of surface features are ridges extending from the side surface of the top wall and the side surface of the bottom wall, the ridges positioned around the open space capable of receiving bone filling for biological bone fusion.

44. (New) The intervertebral implant of claim 21, wherein the first sidewall and the second sidewall include features configured to promote bone fusion.

REMARKS

Responsive to the action dated May 31, 2022 and the Notice of Non-Compliant Response dated August 2, 2022, applicant submits this response and amendments to the claims. With this amendment, claims 37-40 are cancelled, claims 21-22, 25, 29-30, and 33-36 are amended, and new claims 41-44 are added. The amendments and new claims are supported by the specification as originally filed, and no new matter is added.

Interview Summary

Applicant thanks the examiner for the courtesies extended in the examiner interview that took place between the undersigned and Examiner Hammond on Friday, August 12, 2022 and on Monday, August 23, 2022. During the interviews, the claims were discussed in relation to the elected figures. In the Monday, August 23 interview and in follow-up email correspondence, the claim amendments presented herein were discussed. In a phone call on August 25, 2023, Examiner Hammond confirmed that agreement had been reached that the amended claims are encompassed by the elected figures of Species 2.

Response to Restriction Requirement

In response to the restriction requirement made in the action dated May 31, 2022, identified Invention 1, Species 2 and, to the extent required in view of the claim amendments, Sub-species 2B, are elected for examination. Species 2 and Sub-species 2B encompass claims 21-36 as amended and new claims 41-44. The election is made without traverse.

Please apply any necessary charges or credits to Deposit Account No. 06-1050, referencing the above attorney docket number.

Respectfully submitted,

Date: August 25, 2022

/Kiersten M. Batzli/
Kiersten M. Batzli, Reg. No. 75,476

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100708344.doc

Electronic Acknowledgement Receipt	
EFS ID:	46487811
Application Number:	17706873
International Application Number:	
Confirmation Number:	1103
Title of Invention:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION
First Named Inventor/Applicant Name:	Ahmnon D. Moskowitz
Customer Number:	26191
Filer:	Kiersten M. Batzli/Emily Whitcomb
Filer Authorized By:	Kiersten M. Batzli
Attorney Docket Number:	46440-0009017
Receipt Date:	25-AUG-2022
Filing Date:	29-MAR-2022
Time Stamp:	15:25:32
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		ResponsetoRR.PDF	102166 ab366a320b7fe8adfc2864071ac9a5c6bb0596df	yes	9

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response to Election / Restriction Filed	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	9
Warnings:			
Information:			
	Total Files Size (in bytes):	102166	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

26191 7590 08/26/2022

FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
HAMMOND, ELLEN CHRISTINA	

ART UNIT	PAPER NUMBER
3773	

NOTIFICATION DATE	DELIVERY MODE
08/26/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Examiner-Initiated Interview Summary	Application No. 17/706,873	Applicant(s) Moskowitz et al.		
	Examiner ELLEN C HAMMOND	Art Unit 3773	AIA (First Inventor to File) Status No	Page 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	Title	Type
ELLEN C HAMMOND	Primary Examiner	Telephonic
Kiersten Batzli	Attorney of Record	

Date of Interview: 22 August 2022

Issues Discussed:

Other

Applicant submitted proposed amendments directed to the insert illustrated in Figs. 2A-2C of the elected intervertebral implant. The examiner requested a marked up copy of the elected embodiment that includes the claimed structure. The current claim language is not specifically recited in the Specification. Figs. 2A-2C merely include reference numbers 200 (nonexpandable screw box), 207 (ridge), 201 and 202 BDFT screw, 208 hole, and 209 (screw insert). Accordingly, it is unclear what exact structure constitutes the claimed top wall, top surface, bottom surface, bottom wall, first sidewall, second sidewall, internal screw guide, internal bore, recess, entry opening, and exit opening.

/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

26191 7590 09/21/2022

FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
HAMMOND, ELLEN CHRISTINA	

ART UNIT	PAPER NUMBER
3773	

NOTIFICATION DATE	DELIVERY MODE
09/21/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No. 17/706,873	Applicant(s) Moskowitz et al.	
	Examiner ELLEN C HAMMOND	Art Unit 3773	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 8/25/2022.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 21-36 and 41-44 is/are pending in the application.

5a) Of the above claim(s) 31 is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 21-30,32-36 and 41-44 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☑ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 03/29/2022 is/are: a)☐ accepted or b)☑ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application is being examined under the pre-AIA first to invent provisions.

Election/Restrictions

Applicant's election without traverse of Invention I, Species 2 (Figs. 2A-C) and Sub-species b (Fig. 4C) in the reply filed on 8/25/2022 is acknowledged.

Claims 21-36 and 41-44 are pending. **Claim 31** is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected sub-species a shown in Figs. 4A-4B, there being no allowable generic or linking claim.

Priority

Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, 365(c), or 386(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 119 (e) and 120 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of 35 U.S.C. 112(a) or the first paragraph of pre-AIA 35 U.S.C. 112, except for the best mode requirement. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994)

The disclosure of the prior-filed application, Application Nos. 11/536,815, 11/208,644 and 60/670,231 fail to provide adequate support or enablement in the manner provided by 35 U.S.C. 112(a) or pre-AIA 35 U.S.C. 112, first paragraph for one or more claims of this application. It is noted that the

elected embodiment illustrated, for example, in Figs. 2B and 2C is not disclosed in the prior filed applications. Independent claims 21 and 33 both include the recitation of an internal screw guide having an internal bore and a recess which is not disclosed in the above noted prior-filed applications.

Accordingly, the effective filing date for the claimed subject matter in the current application is 8/21/2007, the filing date of app. No. 11/842,855, and will be treated as such for examination purposes.

Specification

The disclosure is objected to because of the following informalities:

In par. 0064, line 7, change "expandable" to --non-expandable--.

Appropriate correction is required.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Regarding claims 21-32 and 41-44, the claimed top wall; top surface; bottom surface; bottom wall; first sidewall; second sidewall; open space; internal screw guide; internal bore; recess; entry opening; exit opening; first indentation; second indentation; second internal screw guide; second internal bore; second entry opening; second exit opening; second recess; threaded hole; rectangular indentation; first slot; first outer surface; second slot; second outer surface; and first and second centerline axis are not supported or identified in the Specification.

Regarding claims 33-36, the claimed top wall; top surface; bottom surface; bottom wall; first sidewall; second sidewall; internal screw guide; internal bore; entry opening; exit opening; side surface; first indentation; first surface; second indentation; second surface; second internal screw guide; and second internal bore are not supported or identified in the Specification.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, regarding claims 21-32 and 41-44, the top wall; top surface; bottom surface; bottom wall; first sidewall; second sidewall; open space; internal screw guide; internal bore; recess; entry opening; exit opening; first indentation; second indentation; second internal screw guide; second internal bore; second entry opening; second exit opening; second recess; threaded hole; rectangular indentation; first slot; first outer surface; second slot; second outer surface; and first and second centerline axis must be shown or the feature(s) canceled from the claim(s). Regarding claims 33-36, the top wall; top surface; bottom surface; bottom wall; first sidewall; second sidewall; internal screw guide; internal bore; entry opening; exit opening; side surface; first indentation; first surface; second indentation; second surface; second internal screw guide; and second internal bore must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

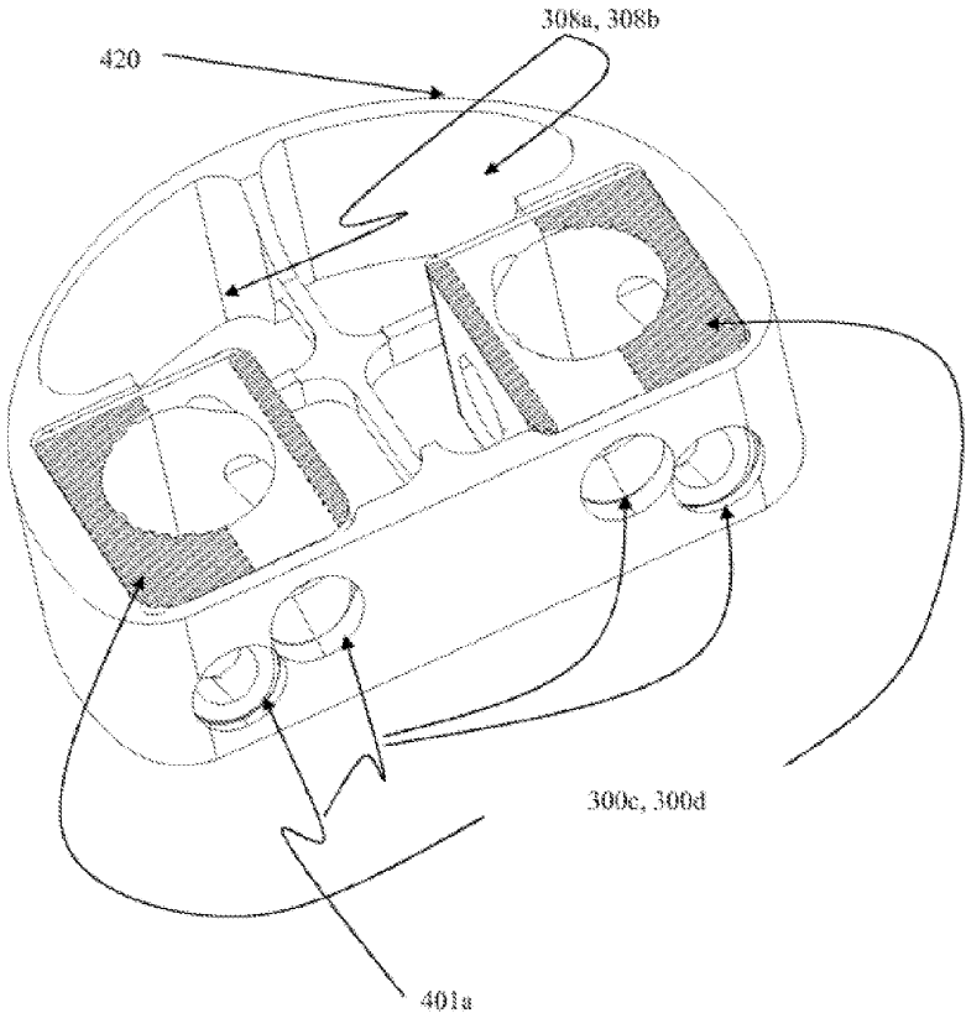
Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

> The following is a quotation of 35 U.S.C. 112(b):
> (b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.
>
> The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 25-27 and 44 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor (or for applications subject to pre-AIA 35 U.S.C. 112, the applicant), regards as the invention.

Claims 25-27 and 44 refer to the first and second sidewall. Applicant annotated Fig. 2B below to identify the structure intended to be the first and second sidewall. It is noted that the first and second sidewall as identified below and of the elected embodiment do not contact the vertebrae but are rather housed within the cage and are smooth surfaces. See below. Accordingly, claims 25-27 and 44 fail to particularly point out the claimed invention.



Claim Rejections - 35 USC § 102

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim(s) 21-24, 28-30, 33, 34, 36 and 41-43 is/are rejected under pre-AIA 35 U.S.C. 102(e) as being anticipated by Waugh et al. (U.S. 2008/0249569 A1).

Concerning claim 21, **as best understood with support from the annotated document (see below) submitted by Applicant during a telephone interview with the examiner**, Waugh et al. disclose an intervertebral implant (see Fig. 4 below) comprising: a top wall including a top surface and a bottom surface opposite the top surface; a bottom wall opposite the top wall; a first sidewall; a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall define an open space capable of receiving bone filling for biological bone fusion; and an internal screw guide having an internal bore and a recess extending into the top surface of the top wall, the internal bore having an entry opening and an exit opening, the entry opening of the internal bore formed at a juncture between the internal bore and the recess, the entry opening of the internal bore formed only in the top surface of the top wall, the recess sized and shaped to accommodate a screw head, and the exit opening formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall.

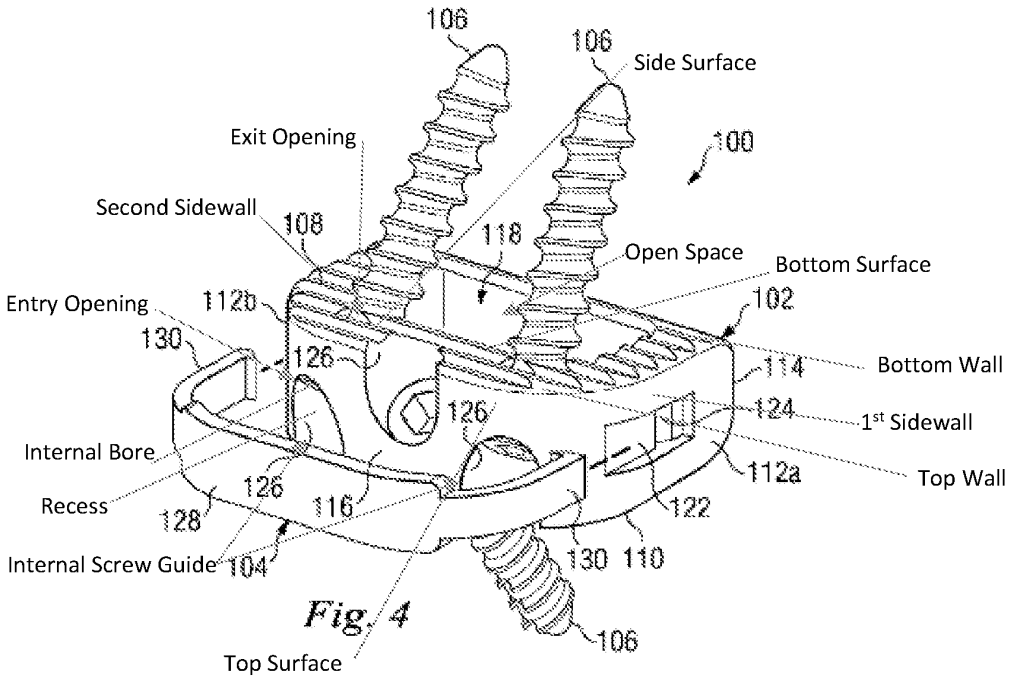

106
106
Side Surface
Exit Opening
100
Second Sidewall
108
118
Open Space
Bottom Surface
Entry Opening
112b
102
130
126
114
Bottom Wall
126
124
1st Sidewall
Internal Bore
112a
Top Wall
126
Recess
116
122
128
Internal Screw Guide
104
130
110
106
Top Surface

Fig. 4

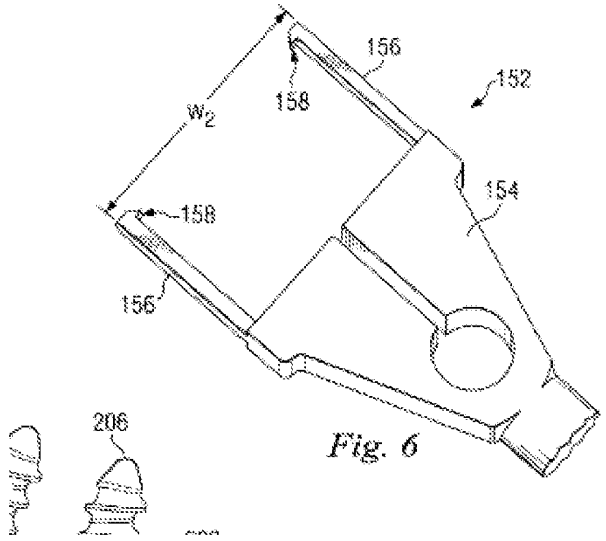

156
152
158
W2
154
158
156
206

Fig. 6

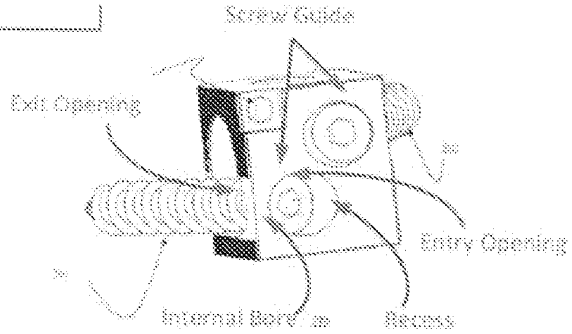

Screw Guide
Exit Opening
Entry Opening
Internal Bore
Recess

Fig. 2C

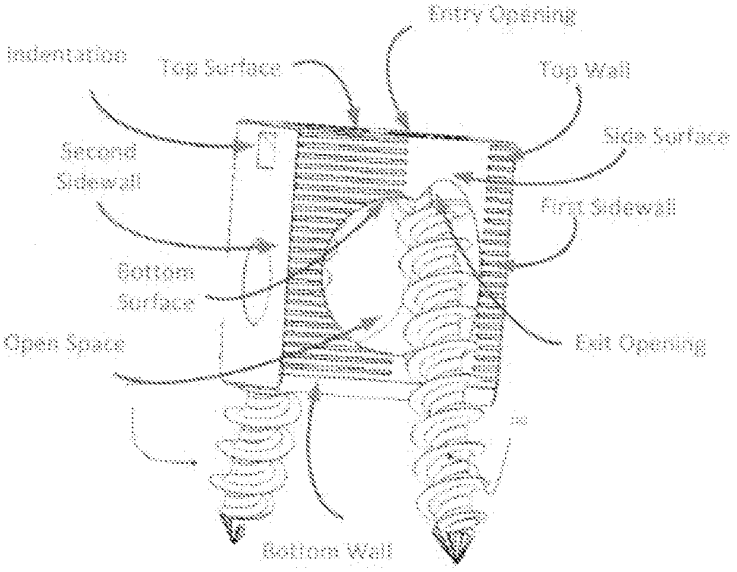

Entry Opening
Indentation
Top Surface
Top Wall
Side Surface
Second Sidewall
First Sidewall
Bottom Surface
Open Space
Exit Opening
Bottom Wall

Fig. 2D

Concerning claim 22, wherein the internal bore is coaxial with the recess (see Fig. 4 above).

Concerning claim 23, wherein the internal screw guide extends through an entire depth of the top wall from the top surface to the bottom surface and exiting at least partially into the open space (see Fig. 4 above).

Concerning claim 24, wherein the intervertebral implant is configured to be inserted into a disc space between a first vertebral body and a second vertebral body and to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion (see Fig. 2).

Concerning claim 28, wherein the side surface of the top wall is patterned with a plurality of surface features to create a rough side surface (see Fig. 4 above).

Concerning claim 29, the intervertebral implant including a first indentation on the first sidewall of the intervertebral implant and a second indentation on the second sidewall of the intervertebral implant (see Fig. 4, elements 122 and 124).

Concerning claim 30, wherein the internal screw guide is a first internal screw guide, and the intervertebral implant further comprises: at least a second internal screw guide having a second internal bore with a second entry opening and a second exit opening, the second entry opening formed within a second recess formed in the top wall and extending into the top surface of the top wall and oriented in a different direction than the internal bore of the first internal screw guide (see Fig. 4 above).

Concerning claim 33, Waugh et al. disclose an implant system comprising: a top wall including a top surface and a bottom surface opposite the top surface; a bottom wall opposite the top wall; a first sidewall; a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall define an open space capable of receiving bone filling for biological bone fusion; and an internal screw guide having an internal bore and a recess extending into the top surface of the top wall, the internal bore having an entry opening and an exit opening, the entry opening of the internal bore formed adjacent to the recess, the recess sized and shaped to accommodate a screw head,

and the exit opening formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall; the intervertebral implant including a first indentation on a first surface of the intervertebral implant and a second indentation on a second surface of the intervertebral implant (see Fig. 4 above); and a tool (see Fig. 6) comprising: an elongate shaft having a first end and a second end; and a gripper at the first end of the elongate shaft, the gripper comprising a first prong (see Fig. 6, elements 156 and 158) and a second prong, wherein the first prong and the second prong are capable of respectively engaging the first indentation and the second indentation of the intervertebral implant.

Concerning claim 34, wherein the internal screw guide is a first internal screw guide having a first internal bore, and the intervertebral implant further comprises a second internal screw guide having a second internal bore configured to orient a screw in a different direction than the first internal bore (see Fig. 4, middle screw element 106), the implant assembly further comprising: a first screw disposed in the first internal screw guide and at least partially within the intervertebral implant; and a second screw disposed in the second internal screw guide and at least partially within the intervertebral implant; wherein each of the first internal screw guide and second internal screw guide is angled to bi-directionally orient the first screw and the second screw in opposite directions.

Concerning claim 36, wherein the first internal screw guide has a first angle with respect to the top wall of the intervertebral implant and the second internal screw guide has a second angle with respect to the top wall of the intervertebral implant, and wherein the first angle and the second angle extend through opposite sides of the intervertebral implant (see Fig. 4, left screw and middle screw).

Concerning claim 41, wherein the side surface of the top wall and a side surface of the bottom wall are each patterned with a plurality of surface features to create a rough side surface of the intervertebral cage (see Fig. 4, element 108).

Concerning claim 42, wherein at least some of the plurality of surface features are positioned on the side surface of the top wall closer to the top surface of the top wall than the exit opening (see Fig. 4, element 108 and Fig. 4 above).

Concerning claim 43, wherein the plurality of surface features are ridges extending from the side surface of the top wall and the side surface of the bottom wall, the ridges positioned around the open space capable of receiving bone filling for biological bone fusion see Fig. 4, element 108 and Fig. 4 above).

Claim Rejections - 35 USC § 103

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries for establishing a background for determining obviousness under pre-AIA 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 32 and 35 is/are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Waugh et al. (U.S. 2008/0249569 A1) in view of Ferree (U.S. 2004/0122424 A1).

Concerning claim 32, Waugh et al. disclose the invention substantially as described above. However, Waugh et al. do not explicitly disclose a first circular side hole extending into the first outer surface of the first sidewall; a second circular side hole extending into the second outer surface of the second sidewall, wherein the second circular side hole is positioned opposite of the first circular side hole, such that the first slot and the first circular side hole are both positioned along a first centerline axis that bisects the first sidewall, and such that the second slot and the second circular side hole are both positioned along a second centerline axis that bisects the second sidewall.

Ferree teaches an implant system wherein the implant includes a first circular side hole extending into a first outer surface (see Fig. 4D, hole receiving screw 444) of a first sidewall and a second circular hole extending into a second outer surface of a second sidewall, wherein the second circular hole is positioned opposite of the first circular side hole (see also Fig. 2A, side openings of element 220) in the same field of endeavor for the purpose of securing the implant between adjacent vertebral bodies and enhancing bone ingrowth.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate circular side openings in Waugh's implant, as taught by Ferree in order to enhance bone ingrowth and thereby strengthening the fusion between adjacent vertebral bodies.

Regarding claim 35, Waugh et al. disclose the invention substantially as described above. However, Waugh et al. do not explicitly disclose a screw guide for controlling a direction of the screws for alignment with the first internal screw guide and the second internal screw guide when the first and second prongs are engaged with the first indentation and the second indentation of the intervertebral

implant, the screw guide further configured to guide the first screw and the second screw through the screw guide and into the first internal screw guide and the second internal screw guide.

Ferree teaches an alignment guide including a screw guide (see Figs. 6A-B, element 610) for controlling a direction of a screw for alignment with an internal screw guide of a spinal fusion implant in the same field of endeavor.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a screw guide on Waugh's tool in order to properly and accurately drill holes and insert screws into the correct point on the implant. The use of guides to position screws is well known in the spinal art where nerves and tissues can be damaged with misplacement.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELLEN HAMMOND whose telephone number is (571)270-3819. The examiner can normally be reached Monday-Friday 8 - 4 PM .

If attempts to reach the examiner by telephone are unsuccessful, ***please contact*** **the examiner's supervisor, Eduardo C. Robert, *at* 571 272-4719**. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ELLEN C HAMMOND/
Primary Examiner, Art Unit 3773

Notice of References Cited	Application/Control No. 17/706,873	Applicant(s)/Patent Under Reexamination Moskowitz et al.	
	Examiner ELLEN C HAMMOND	Art Unit 3773	Page 1 of 1

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	R					
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

CPC - Searched*		
Symbol	Date	Examiner
A61F2/447 and 4455	09/14/2022	ECH
A61F2002/448	09/14/2022	ECH

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
IPR2020-01307 Reviewed Inter Partes Review of U.S. Patent No. 8,353,913	09/14/2022	ECH
IPR2020-01308 Reviewed Inter Partes Review of U.S. Patent No. 9,889,022	09/14/2022	ECH
Performed an inventor and assignee search. Reviewed Dossier references. Reviewed cited references in family. Performed a text search in ip.com.	09/14/2022	ECH

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	

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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE									
Final	Original	09/14/2022									
	1	-									
	2	-									
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	19	-									
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	21	✓									
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	26	✓									
	27	✓									
	28	✓									
	29	✓									
	30	✓									
	31	N									
	32	✓									
	33	✓									
	34	✓									
	35	✓									
	36	✓									
	37	-									
	38	-									
	39	-									
	40	-									
	41	✓									
	42	✓									

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	Examiner	**Art Unit**
	ELLEN C HAMMOND	3773

CLAIM		DATE								
Final	Original	09/14/2022								
	43	✓								
	44	✓								

Substitute Disclosure Form / U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No.	Application No.
Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))	46440-0009017	17/706,873
	Applicant: Moskowitz Family LLC	
	Filing Date: March 29, 2022	Group Art Unit: Unknown

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	Filing Date March 29, 2022	Group Art Unit Unknown

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Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))	Applicant Moskowitz Family LLC	
	Filing Date March 29, 2022	Group Art Unit Unknown

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Examiner Initial	Desig. ID	Document
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	329.	Guyer and Ohnmeiss, "Degenerative Disc Disease: Fusion Cages and Dowels," Lippincott Williams & Wilkins, Philadelphia, PA, 2004, Ch. 35, 12 pages, Exhibit No. 1013 in Case IPR2020-01304, U.S. Patent 10,307,268
	330.	Guyer and Ohnmeiss, "Degenerative Disc Disease: Fusion Cages and Dowels," Lippincott Williams & Wilkins, Philadelphia, PA, 2004, Ch. 35, 12 pages, Exhibit No. 1013 in Case IPR2020-01305, U.S. Patent 10,478,319
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Examiner Signature	Date Considered

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Substitute Disclosure Form

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /E.C.H/

Substitute Disclosure Form / U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No.	Application No.
Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))	46440-0009017	17/706,873
	Applicant: Moskowitz Family LLC	
	Filing Date: March 29, 2022	Group Art Unit: Unknown

Other Documents (include Author, Title, Date, and Place of Publication)		
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	347.	Lane et al., "Transperitoneal Approach to the Intervertebral Disc in the Lumbar Area," Annals of Surgery, March 1948, 127(3):537, Exhibit No. 1015 in Case IPR2020-01307, U.S. Patent 8,353,913
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Examiner Signature	Date Considered
/ELLEN C HAMMOND/	09/14/2022

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Attorney Docket No.: 46440-0009017

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	:	Ahmnon D. Moskowitz	Art Unit	:	Unknown
Application No.	:	17/706,873	Examiner	:	Unknown
Filed	:	March 29, 2022	Conf. No.	:	1103
Title	:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION			

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Please consider the documents listed on the disclosure form submitted with this statement. Copies of the documents are being submitted with this statement to the extent required under 37 C.F.R. § 1.98(a)(2).

Under 35 U.S.C. § 120, this application relies on the earlier filing date of application number 16/744,755, filed on January 16, 2020. All listed documents were submitted to and/or cited by the Office in the prior application, and so copies of those documents are not provided in this application.

This statement is being filed within three months of the filing date of the application or before the receipt of a first action on the merits.

Apply any necessary charges or credits applicable under 37 C.F.R. § 1.17(p) to deposit account 06-1050, referencing the above attorney docket number.

Please contact the undersigned if there are any questions regarding this statement.

Respectfully submitted,

Date: April 4, 2022 /Kiersten M. Batzli/
Kiersten M. Batzli, Reg. No. 75,476

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Bibliographic Data

Application No: 17/706,873

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☐ No ☐ Met After Allowance

Verified and Acknowledged: /ELLEN C HAMMOND/ Examiner's Signature | Initials

Title: BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
03/29/2022	623	3773	46440-0009017
RULE			

APPLICANTS

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CONTINUING DATA

This application is a CON of 16744755 01/16/2020

16744755 is a CON of 15944117 04/03/2018 PAT 10537442

15944117 is a CON of 15894471 02/12/2018 PAT 10390969

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11208644 has PRO of 60670231 04/12/2005 *

(*) Data provided by applicant is not consistent with PTO record

FOREIGN APPLICATIONS

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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L55	198	("2360942" | "4064881" | "4554914" | "4599086" | "4636217" | "4904261" | "4960420" | "4997432" | "5005749" | "5062850" | "5123926" | "5290312" | "5405391" | "5413583" | "5454819" | "5514180" | "5660188" | "5667472" | "5713912" | "5782832" | "5865848" | "5888223" | "5916224" | "5951574" | "5960522" | "5968054" | "5976136" | "6126689" | "6224602" | "6235034" | "6322562" | "6342074" | "6368350" | "6375682" | "6419704" | "6432106" | "6454807" | "6458159" | "6527804" | "6533818" | "6558423" | "6572653" | "6579318" | "6582468" | "6613055" | "6629998" | "6641614" | "6655243" | "6716247" | "6719794" | "6723126" | "6733532" | "6764491" | "6770094" | "6824564" | "6852117" | "6890355" | "6904308" | "6953477" | "6955671" | "6962606" | "6972019" | "6974480" | "7030904" | "7033394" | "7037258" | "7077864" | "7097615" | "7135043" | "7211112" | "7232464" | "7238203" | "7326248" | "7442209" | "7442299" | "7615059" | "7618456" | "7628816" | "7704279" | "7727246" | "7758617" | "7776047" | "7776093" | "7803162" | "7846207" | "7862616" | "7875076" | "7887591" | "7942903" | "7959675" | "7972363" | "7985255" | "8029512" | "8034060" | "8105367" | "8114162" | "8137405" | "8167949" | "8268000" | "8273127" | "8328851" | "8328872" | "8353913" | "8403986" | "8414651" | "8419797"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/09/13 01:53 PM

		| "8425607" | "8540774" | "8613761" | "8728165" | "8790405" | "8882813" | "20020068977" | "20020143338" | "20030130737" | "20040088054" | "20040177531" | "20040186482" | "20040186569" | "20040193272" | "20040220571" | "20040254644" | "20050027362" | "20050049590" | "20050177235" | "20050216084" | "20050256576" | "20050261769" | "20050273170" | "20050278026" | "20060155285" | "20060241621" | "20070049943" | "20070167678" | "20070198089" | "20070213820" | "20070250167" | "20070250172" | "20070276498" | "20080033440" | "20080177307" | "20080183293" | "20080249569" | "20080249575" | "20080249625" | "20080281424" | "20080281425" | "20090030520" | "20090080997" | "20090105830" | "20090105831" | "20090112271" | "20090182430" | "20090187218" | "20090210062" | "20090224023" | "20090234455" | "20100145460" | "20100305704" | "20100324606" | "20110125269" | "20110137349" | "20110178600" | "20110208312" | "20110288646" | "20110295327" | "20110295371" |					

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		"20060217713" OR "20060241621" OR "20060253201" OR "20070049943" OR "20070167678" OR "20070191850" OR "20070198089" OR "20070213820" OR "20070250167" OR "20070250172" OR "20070270968" OR "20070276498" OR "20080033440" OR "20080045968" OR "20080177307" OR "20080183293" OR "20080249569" OR "20080249575" OR "20080249625" OR "20080281424" OR "20080281425" OR "20090030520" OR "20090080997" OR "20090105830" OR "20090105831" OR "20090112271" OR "20090182430" OR "20090187218" OR "20090210062" OR "20090224023" OR "20090234455" OR "20100100138" OR "20100145460" OR "20100305704" OR "20100324606" OR "20110125269" OR "20110137349" OR "20110172774" OR "20110178600" OR "20110208312" OR "20110288646" OR "20110295327" OR "20110295371" OR "20110307011" OR "20110319935" OR "20120010714" OR "20120271423" OR "20120277870" OR "20120323330" OR "20120330419" OR "20130018468" OR "20130018469" OR "20130018470" OR "20130023991" OR "20130023992" OR "20130053962" OR "20130060339" OR "20130073044" OR					

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L65	7643	a61f2/4455.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2022/09/14 08:20 PM
L66	182	L65 AND (screw near1 guide)	(US-PGPUB; USPAT)	OR	ON	ON	2022/09/14 08:21 PM

L67	9521	a61f2002/448.cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/09/14 08:37 PM
L68	439	L67 AND (screw near20 guide)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/09/14 08:37 PM
L69	15837	a61f2/447.cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/09/14 09:11 PM
L70	8083	L69 AND (screw OR fastener OR nail)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO,	OR	ON	ON	2022/09/14 09:12 PM

			MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L71	26650	a61f2/4455.cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/09/14 09:41 PM
L72	13381	L71 AND (screw OR fastener OR nail)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/09/14 09:41 PM
L73	6312	L72 AND guide	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/09/14 09:41 PM
L74	78	moskowitz near1 family.as.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP,	OR	ON	ON	2022/09/15 09:15 AM

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L78	257	(ahmnon near2 moskowitz OR pablo near2 alvarado OR mosheh near2 moskowitz OR nathan near2 moskowitz).in.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/09/15 09:16 AM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

26191 7590 12/02/2022

FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
HAMMOND, ELLEN CHRISTINA	

ART UNIT	PAPER NUMBER
3773	

NOTIFICATION DATE	DELIVERY MODE
12/02/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Applicant-Initiated Interview Summary	Application No. 17/706,873	Applicant(s) Moskowitz et al.		
	Examiner ELLEN C HAMMOND	Art Unit 3773	AIA (First Inventor to File) Status No	Page 1 of 2

All Participants (applicant, applicants representative, PTO personnel)	Title	Type
ELLEN C HAMMOND	Primary Examiner	Telephonic
Kiersten Batzli	Attorney of Record	

Date of Interview: 29 November 2022

Issues Discussed:

35 U.S.C. 112

Applicant annotated Fig. 2B (see page 9 of the non-final) and identified the structure intended to be the first and second sidewall. The examiner explained that the identified first and second sidewall do not contact the vertebrae as claimed. The first and second sidewalls directly contact the shell surrounding the insert and do not make contact with the vertebrae. The claims do not include the shell but are only directed to the insert.

Objections

Applicant inquired as to the best way to address the objections to the specification and drawings (pages 3-4 of the non-final rejection). The examiner explained that the claim language should find support in the Specification and drawings so that the claimed structure can be properly identified. The drawings filed 3/29/2022 could be marked up to identify the claimed structure. A paragraph in the specification identifying the claimed structure in the drawings could also be added.

Drawings

The drawings will be amended to include reference numbers identifying the claimed structure.

/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Applicant-Initiated Interview Summary	**Application No.** 17/706,873	**Applicant(s)** Moskowitz et al.		
	Examiner ELLEN C HAMMOND	**Art Unit** 3773	**AIA (First Inventor to File) Status** No	**Page** **2 of 2**

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/706,873	Filing Date 03/29/2022	☐ To be Mailed

ENTITY: ☐ LARGE ☑ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $240 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	12/09/2022	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0		x $50 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $240 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/DAWN BREWER/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	:	Ahmnon D. Moskowitz	Art Unit	:	3773
Application No.	:	17/706,873	Examiner	:	Ellen Christina Hammond
Filed	:	March 29, 2022	Conf. No.	:	1103
Title	:	INTERVERTEBRAL IMPLANT AND TOOL ASSEMBLY			

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY TO ACTION OF SEPTEMBER 21, 2022

Please consider the following reply.

Amendments to the Specification:

Please replace paragraph [0064] on page 17 of the specification with the below amended paragraph:

[0064] Figures 2A-C illustrate three-dimensional views of the Lumbar intervertebral non-expandable screw box 200 with two BDFT screws 201, 202 (Embodiment II). Screws 201 and 202 perforate and orient in opposing, superior and inferior directions. There are holes 208 and hollow spaces allowing packaging with bone. There are also holes which allow the traversal of screws. The superior and inferior edges include ridges 207 to facilitate integration and fusion with superior and inferior vertebral bodies. The non-expandable ~~expandable~~ screw box 200 may include a screw insert 209 to attach a horizontal mini-plate (not shown). The self-contained internalized drill guides are at a 25 degree angle. The screw boxes can be designed with the internalized drill guides with different angles and/or different positions within the box.

Please add the following new paragraph after paragraph [0064] on page 17 of the specification:

[0064.1] Figures 2A-2C illustrate that the lumbar intervertebral non-expandable screw box 200 includes a top wall 220, top surface of the top wall 221, bottom surface of the top wall 222, side surface of the top wall 223, first sidewall 224, second sidewall 225, open space 226, first internal screw guide 240, first internal bore 248, first recess 244, first entry opening 249, first exit opening 245, first indentation 228 in a first outer side surface 230, second indentation 229 in a second outer side surface 231, second internal screw guide 242, second internal bore 250, second entry opening 251, second exit opening 252, second recess 246, threaded hole 209 (also referred to as screw insert and circular opening herein), rectangular indentation 232, first centerline axis 238, and second centerline axis 239. The lumbar intervertebral non-expandable screw box 200 also includes an aperture 208 (also referred to as holes or circular side hole herein) and an inner side surface of the sidewall 233.

Amendments to Claims:

Listing of Claims.

1-20. (Cancelled)

21. (Currently Amended) An intervertebral implant comprising:

a top wall including a top surface and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall define an open space capable of receiving bone filling for biological bone fusion; and

an internal screw guide having an internal bore and a recess extending into the top surface of the top wall, the internal bore having an entry opening and an exit opening, the entry opening of the internal bore formed at a juncture between the internal bore and the recess, the entry opening of the internal bore formed only in the top surface of the top wall, the recess sized and shaped to accommodate a screw head of a screw, and the exit opening formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall;

wherein the intervertebral implant does not include a faceplate to retain the screw in the internal screw guide.

22. (Previously Presented) The intervertebral implant of claim 21, wherein the internal bore is coaxial with the recess.

23. (Previously Presented) The intervertebral implant of claim 22, wherein the internal screw guide extends through an entire depth of the top wall from the top surface to the bottom surface and exiting at least partially into the open space.

24. (Previously Presented) The intervertebral implant of claim 23, wherein the intervertebral implant is configured to be inserted into a disc space between a first vertebral body and a second vertebral body and to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion.

25. (Currently Amended) The intervertebral implant of claim 24, wherein each of the first sidewall and the second sidewall has a surface positioned opposite to a first surface ~~configured to contact one~~ of the first vertebral body and a second surface of the second vertebral body when the intervertebral implant is inserted into the disc space.

26. (Currently Amended) The intervertebral implant of claim 25, wherein the surfaces of the first sidewall and the second sidewall include surface features, and wherein the surface features include a plurality of ridges ~~for contacting the first vertebral body and a second vertebral body~~.

27. (Cancelled).

28. (Previously Presented) The intervertebral implant of claim 21, wherein the side surface of the top wall is patterned with a plurality of surface features to create a rough side surface.

29. (Cancelled).

30. (Previously Presented) The intervertebral implant of claim 21, wherein the internal screw guide is a first internal screw guide, and the intervertebral implant further comprises:

at least a second internal screw guide having a second internal bore with a second entry opening and a second exit opening, the second entry opening formed within a second recess formed in the top wall and extending into the top surface of the top wall and oriented in a different direction than the internal bore of the first internal screw guide.

31. (Cancelled).

32. (Currently Amended) The intervertebral implant of claim 21, further comprising:

a first ~~slot~~ indentation on a first outer side surface of the first sidewall;

a second ~~slot~~ indentation on a second outer side surface of the second sidewall, wherein the second ~~slot~~ indentation is positioned opposite of the first ~~slot~~ indentation;

a first circular side hole extending into the first outer side surface of the first sidewall;

a second circular side hole extending into the second outer side surface of the second sidewall, wherein the second circular side hole is positioned opposite of the first circular side hole,

wherein the first ~~slot~~ indentation and the first circular side hole are both positioned along a first centerline axis that bisects the first sidewall, and

wherein the second ~~slot~~ indentation and the second circular side hole are both positioned along a second centerline axis that bisects the second sidewall.

33. (Currently Amended) An implant system comprising:

a top wall including a top surface and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall define an open space capable of receiving bone filling for biological bone fusion, and wherein the first sidewall and the second sidewall each defines an aperture through an outer side surface to an opposite inner side surface, the aperture connected to the open space and configured to promote biological bone fusion through the first sidewall and the second sidewall; and

an internal screw guide having an internal bore and a recess extending into the top surface of the top wall, the internal bore having an entry opening and an exit opening, the entry opening of the internal bore formed adjacent to the recess, the recess sized and shaped to accommodate a screw head, and the exit opening formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall;

the intervertebral implant including a first indentation on a first surface of the intervertebral implant and a second indentation on a second surface of the intervertebral implant; and

a tool comprising:

an elongate shaft having a first end and a second end; and

a gripper at the first end of the elongate shaft, the gripper comprising a first prong and a second prong,

wherein the first prong and the second prong are capable of respectively engaging the first indentation and the second indentation of the intervertebral implant.

34. (Previously Presented) The implant system of claim 33, wherein the internal screw guide is a first internal screw guide having a first internal bore, and the intervertebral implant further comprises a second internal screw guide having a second internal bore configured to orient a screw in a different direction than the first internal bore, the implant assembly further comprising:

a first screw disposed in the first internal screw guide and at least partially within the intervertebral implant; and

a second screw disposed in the second internal screw guide and at least partially within the intervertebral implant; wherein each of the first internal screw guide and second internal screw guide is angled to bi-directionally orient the first screw and the second screw in opposite directions.

35. (Cancelled)

36. (Previously Presented) The implant system of claim 34, wherein the first internal screw guide has a first angle with respect to the top wall of the intervertebral implant and the second internal screw guide has a second angle with respect to the top wall of the intervertebral implant, and wherein the first angle and the second angle extend through opposite sides of the intervertebral implant.

37-40. (Cancelled).

41. (Previously Presented) The intervertebral implant of claim 21, wherein the side surface of the top wall and a side surface of the bottom wall are each patterned with a plurality of surface features to create a rough side surface of the intervertebral cage.

42. (Previously Presented) The intervertebral implant of claim 41, wherein at least some of the plurality of surface features are positioned on the side surface of the top wall closer to the top surface of the top wall than the exit opening.

43. (Previously Presented) The intervertebral implant of claim 42, wherein the plurality of surface features are ridges extending from the side surface of the top wall and the side surface of the bottom wall, the ridges positioned around the open space capable of receiving bone filling for biological bone fusion.

44. (Cancelled).

45. (New) An intervertebral implant system comprising:

a top wall including a top surface and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall define an open space capable of receiving bone filling for biological bone fusion;

a substantially circular opening extending substantially normally into the top surface of the top wall; and

an internal screw guide having an internal bore and a recess extending into the top surface of the top wall, the internal bore having an entry opening and an exit opening, the entry opening of the internal bore formed at a juncture between the internal bore and the recess, the entry opening of the internal bore formed only in the top surface of the top

wall, the recess sized and shaped to accommodate a screw head, and the exit opening formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall.

46. (New) The intervertebral implant system of claim 45, further comprising a substantially rectangular indentation extending into at least part of the top wall, the substantially rectangular indentation oriented substantially normally into the top surface of the top wall.

47. (New) The intervertebral implant system of claim 46, wherein the substantially circular opening is formed in the substantially rectangular opening.

48. (New) The intervertebral implant system of claim 45, wherein the intervertebral implant system does not include a faceplate to retain the screw head in the internal screw guide.

49. (New) The intervertebral implant system of claim 45, wherein the top surface of the top wall meets the outer side surfaces of the first and second sidewalls at a corner that is substantially perpendicular.

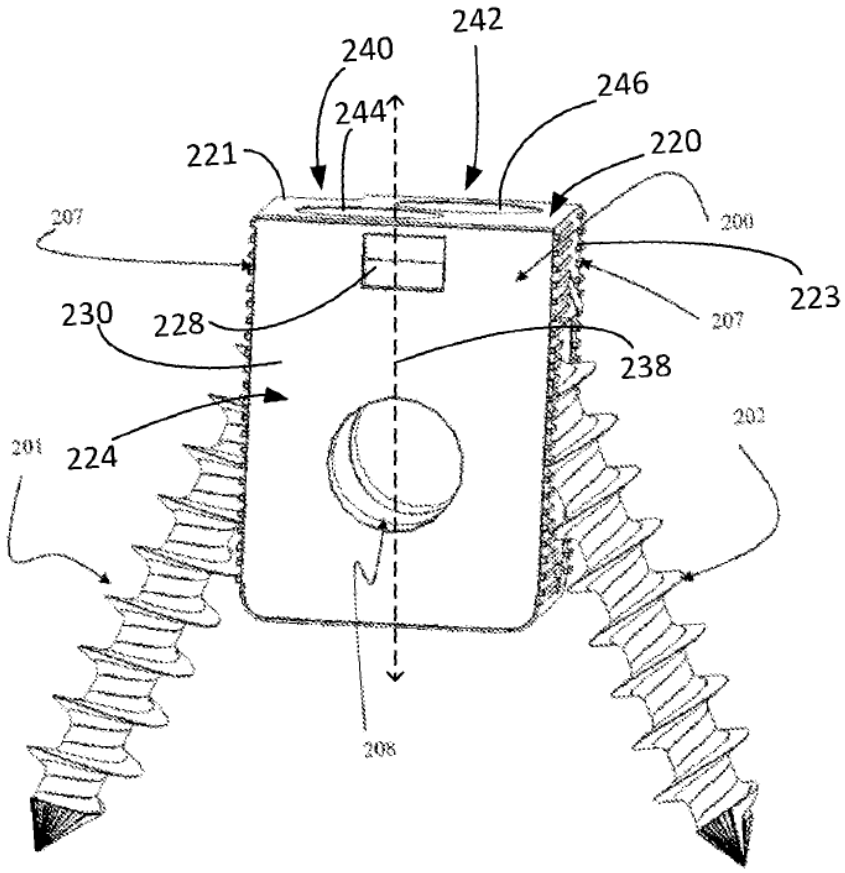

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Fig. 2A

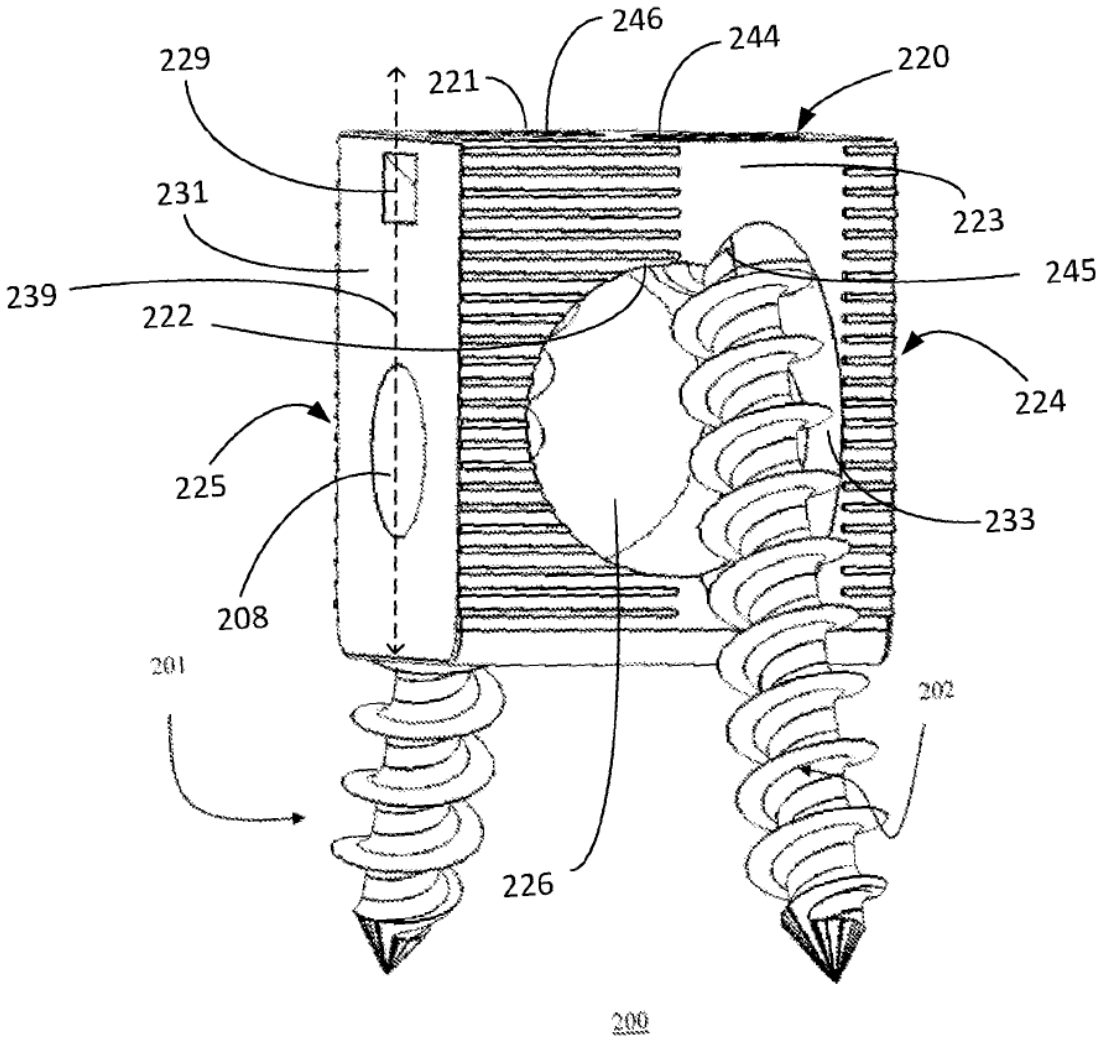

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Fig. 2B

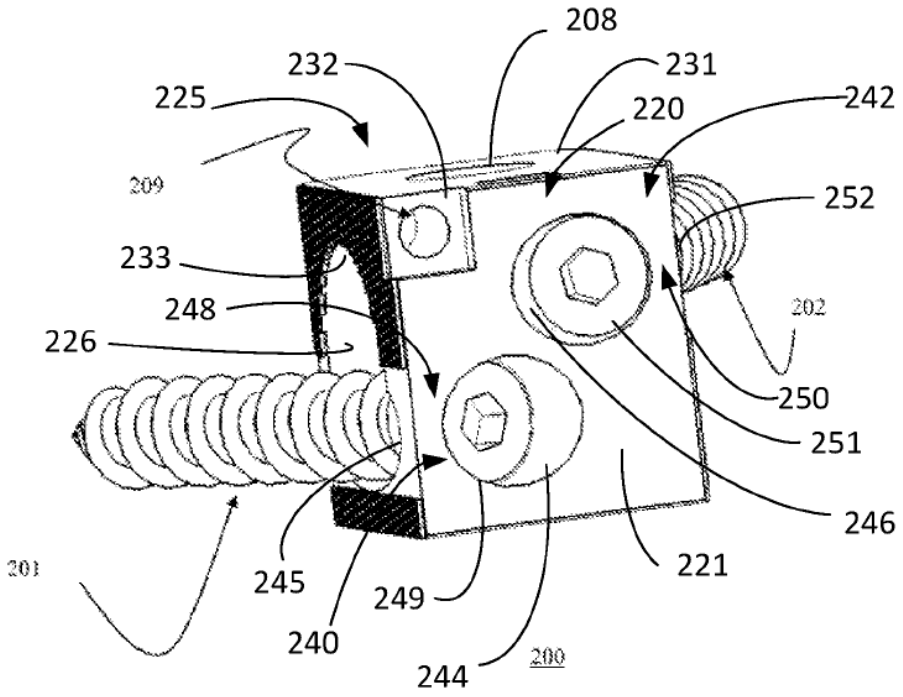

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Fig. 2C

Electronic Acknowledgement Receipt	
EFS ID:	47176649
Application Number:	17706873
International Application Number:	
Confirmation Number:	1103
Title of Invention:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION
First Named Inventor/Applicant Name:	Ahmnon D. Moskowitz
Customer Number:	26191
Filer:	Kiersten M. Batzli/Emily Whitcomb
Filer Authorized By:	Kiersten M. Batzli
Attorney Docket Number:	46440-0009017
Receipt Date:	09-DEC-2022
Filing Date:	29-MAR-2022
Time Stamp:	11:44:16
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		ReplytoOA.PDF	148599 90b30ea30b1a59b2af0401ccc4be7984a880777e	yes	14

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Request for Reconsideration-After Non-Final Rejection	1	1
	Specification	2	2
	Claims	3	8
	Drawings-only black and white line drawings	9	9
	Applicant Arguments/Remarks Made in an Amendment	10	14

Warnings:					
Information:					
2	Drawings-only black and white line drawings	ReplacementDrawings.pdf	1496681 151d409f534b1a5368313eb76ac6034fba8da0c3	no	3
Warnings:					
Information:					
		Total Files Size (in bytes):	1645280		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Amendments to the Drawings:

The attached replacement sheets of drawings (3) includes changes to Figs. 2A-2C and replace the original sheets including Figs. 2A-2C.

In Figures 2A-2C, reference numerals and lead lines are added to correspond to the reference numerals associated with the structures recited in the claims in new paragraph [0064.1].

Attachments following last page of this Amendment:

Replacement Sheet (3 pages including Figs. 2A, 2B, and 2C)

REMARKS

Claims 21-26, 28, 30, 32-34, 36, 41-43 and 45-49 are pending, and claims 21, 33 and 45 are independent. Claims 27, 29, 31, 35 and 44 are cancelled without prejudice or disclaimer, claims 21, 25, 26, 32 and 33 are amended, and new claims 45-49 are added. The amendments and new claims are supported by the specification and drawings as filed, and no new matter is added.

Summary of Examiner Interview

Applicant thanks Examiner Hammond for the courtesies extended during the telephonic interview held on November 29, 2022 between Examiner Hammond and the undersigned. During the interview, the objections to the specification and drawings were discussed. The specification and drawings have been amended herein based on Examiner Hammond's suggestions. Additionally, the § 112 rejection was discussed, and claims 25 and 26 are amended herein to address the rejection.

Priority Claim

Applicant acknowledges the Office's statement that the effective filing date for the claimed subject matter in the current application is August 21, 2007, the filing date of U.S. Patent Application No. 11/842,855.

Objections to the Specification

The specification was objected to as containing informalities. Applicant has amended paragraph [0064] to adopt the examiner's suggestion to correct "expandable" to "non-expandable." Applicant respectfully requests withdrawal of the objection to paragraph [0064] of the specification in view of the amendment to the specification.

Additionally, the specification was objected to as failing to provide proper antecedent basis for the claimed subject matter. Applicant has amended the specification to adopt the examiner's suggestions as discussed in the interview of November 29, 2022. The amendment to

the specification adds new paragraph [0064.1] referencing the structures recited in the claims as they appear in Figs. 2A-2C. No new matter is added by the amendment to the specification.

Applicant respectfully requests withdrawal of the objection to the specification in view of the amendments to the specification.

Objections to the Drawings

The drawings were objected to as failing to show each and every feature of the invention specified in the claims. Applicant has amended Figs. 2A, 2B, and 2C to include reference numerals and lead lines corresponding to the claimed structure, which is further described in new paragraph [0064.1] of the amended specification. The replacement sheets (3) including Figs. 2A-2C are submitted herewith. No new matter is added by the amendment to the drawings.

Applicant respectfully requests withdrawal of the objection to the drawings in view of the amended drawings submitted herewith.

Rejection under 35 U.S.C. § 112

Claims 25-27 and 44 were rejected under 35 U.S.C. § 112(b) as being indefinite. Claims 25 and 26 have been amended to clarify the claimed subject matter, and claims 27 and 44 have been cancelled without prejudice or disclaimer.

Applicant submits that the amendments to claims 25-26 and cancellation of claims 27 and 44 render the rejection under § 112 moot. Applicant respectfully requests reconsideration and withdrawal of the rejection.

35 U.S.C. §§ 102 and 103

Claims 21-24, 28-30, 33, 34, 36 and 41-43 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent Application Publication No. 2008/0249569 Al ("Waugh"), and claims 32 and 35 were rejected under 35 U.S.C. § 103 as being unpatentable over Waugh in view of U.S. Patent Application Publication No. 2004/0122424 Al ("Ferree"). Without conceding the merits of the rejection, but to further prosecution, claims have been amended. Applicant traverses the rejections for at least the reasons below.

A. Claim 21

Claim 21 recites, *inter alia*, "the intervertebral implant does not include a faceplate to retain the screw in the internal screw guide." Waugh fails to teach or suggest at least this feature of claim 21, especially in combination with the other features recited in claim 21.

Waugh describes "[a] faceplate for at least partially covering a plurality of anchor member apertures." Waugh, Abstract. All embodiments described by Waugh require a faceplate to "inhibit back-out of the anchor member from the anchor member aperture." Waugh, [0006], *see also* [0031]-[0032]. Waugh does not describe intervertebral implants for use without a faceplate for holding the anchors in position in the implant.

Accordingly, Waugh fails to teach or suggest "the intervertebral implant does not include a faceplate to retain the screw in the internal screw guide," as claim 21 recites. Ferree, cited with regard to claims 32 and 35, fails to remedy the deficiencies of Waugh. Accordingly, claim 21 is patentable over the prior art of record. Claims 22-26, 28, 29-30, 32 and 41-43 depend, directly or indirectly, from claim 21 and are patentable over the prior art of record for at least the same reasons, as well as for the combinations recited therein.

B. Claim 33

Claim 33 recites, *inter alia*, "the first sidewall and the second sidewall each defines an aperture through an outer side surface to an opposite inner side surface, the aperture connected to the open space and configured to promote biological bone fusion through the first sidewall and the second sidewall." Waugh fails to teach or suggest at least this feature of claim 33, especially in combination with the other features recited in claim 33.

Waugh describes a face plate 104 that has a "main body 128 [which] extends substantially the entire length of the front surface 116 in an arcing shape, from one side surface 112a to the other side surface 112b." Waugh, [0032]. Waugh describes that "[t]he side surfaces 112a-b each include a recessed slot 122… [w]ithin the slot 122, attachment features, such as connecting impressions 124 … are configured to provide a secure connection with the faceplate." Waugh, [0029].

However, Waugh fails to teach or suggest "the first sidewall and the second sidewall each defines an aperture through an outer side surface to an opposite inner side surface, the aperture

connected to the open space and configured to promote biological bone fusion through the first sidewall and the second sidewall," as claim 33 recites. Ferree, cited with regard to claims 32 and 35, fails to remedy the deficiencies of Waugh. Accordingly, claim 33 is patentable over the prior art of record. Claims 34 and 36 depend, directly or indirectly, from claim 33 and are patentable over the prior art of record for at least the same reasons, as well as for the combinations recited therein.

In view of the foregoing, Applicant submits that claims 21-26, 28, 30, 32-34, 36, and 41-43 are patentable over the prior art of record. Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. §§ 102 and 103.

New Claims

New claim 45 recites, *inter alia*, "a substantially circular opening extending substantially normally into the top surface of the top wall." Waugh and Ferree fail to teach or suggest at least this feature of claim 45. Claims 46-49 depend, directly or indirectly, from claim 45 and are patentable over the prior art of record for at least the same reasons, as well as for the combinations recited therein.

CONCLUSION

By responding in the foregoing remarks only to particular positions taken in the action, Applicant does not acquiesce with other positions that have not been explicitly addressed. In addition, Applicant's selecting some particular arguments for the patentability of a claim should not be understood as implying that no other reasons for the patentability of that claim exist. Finally, Applicant's decision to amend or cancel any claims should not be understood as implying that Application agrees with any positions taken in the action with reference to that claim or other claims, or that Applicant adopts or agrees with any position except as specifically stated in this paper. In particular, by amending a claim, Applicant does not necessarily concede that the claim prior to amendment was unpatentable.

Applicant believes that no fees are due at this time. However, if fees are due, please apply those fees and any other necessary charges or credits to Deposit Account 06-1050, referencing the above attorney docket number.

Respectfully submitted,

Date: December 9, 2022

/Kiersten M. Batzli/
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

26191 7590 12/30/2022

FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
HAMMOND, ELLEN CHRISTINA	

ART UNIT	PAPER NUMBER
3773	

NOTIFICATION DATE	DELIVERY MODE
12/30/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No. 17/706,873	Applicant(s) Moskowitz et al.	
	Examiner ELLEN C HAMMOND	Art Unit 3773	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 12/9/2022.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 21-26,28,30,32-34,36,41-43 and 45-49 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 21-26,28,30,32-34,36,41-43 and 45-49 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☑ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 12/09/2022 is/are: a)☐ accepted or b)☑ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application is being examined under the pre-AIA first to invent provisions. This Office action is in response to the amendment filed 12/09/2022. Claims 21-26, 28, 30, 32-34, 36, 41-43, and 45-49 are pending.

Drawings

The drawings were received on 12/09/2022. Fig. 2C of these drawings include reference numbers 248 (identified as the first internal bore), 240 (identified as the first internal screw guide), 242 (identified as the second internal screw guide) and 250 (identified as the second internal bore). The arrows for reference numbers 248 and 240 appear to point to the same structure. It does not appear that the first internal bore is separate from the first internal screw guide. The same is true for reference numbers 242 and 250.

Additionally, the arrows from reference numbers 248, 242 and 250 don't identify the disclosed structure. The arrows point to the top surface of the top wall.

Furthermore, the drawings fail to illustrate an entry opening of the internal bore that is formed only in the top surface of the top wall AND the entry opening formed at a juncture between the internal bore and the recess.

The drawings are objected to under 37 CFR 1.83(a) because they fail to show any structural difference between the internal bore and the internal screw guide as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of

the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

In par. 0064.1, line 2, "221" should be inserted after "top surface" and "222" should be inserted after "bottom surface." In line 3, "223" should be inserted after "surface". In line 11, "233" should be inserted after "surface."

The specification fails to describe an entry opening of the internal bore that is formed only in the top surface of the top wall AND the same entry opening formed at a juncture between the internal bore and the recess.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 21—26, 28, 30, 32 41-43 and 45-49 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor (or for applications subject to pre-AIA 35 U.S.C. 112, the applicant), regards as the invention.

Claims 21 and 45 recite that that the implant has an internal screw guide having an internal bore and a recess extending into the top surface of the top wall, the internal bore having an entry opening and an exit opening, the entry opening of the internal bore formed at a juncture between the internal bore and the recess, the entry opening of the internal bore formed only in the top surface of the top wall. It is unclear how the entry opening can be both formed at a juncture between the internal bore and the recess AND formed only in the top surface of the top wall.

Claim Rejections - 35 USC § 102

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim(s) 21-26, 28, 30, 32 and 41-43 is/are rejected under pre-AIA 35 U.S.C. 102(e) as being anticipated by Waugh et al. (U.S. 8,268,000 B2).

Concerning claim 21, as best understood, Waugh et al. disclose an intervertebral implant comprising: a top wall (see Fig. 12 below) including a top surface (see Fig. 12 below) and a bottom surface (see Fig. 12 below) opposite the top surface; a bottom wall (see Fig. 12 below) opposite the top wall; a first sidewall (see Fig. 12 below); a second sidewall (see Fig. 12 below) opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall define an open space (see Fig. 12 below) capable of receiving bone filling for biological bone fusion; and an internal screw guide (see Fig. 12 below) having an internal bore and a recess extending into the top surface of the top wall, the internal bore having an entry opening (see Fig. 12 below) and an exit opening (see Fig. 12 below), the entry opening of the internal bore formed at a juncture between the internal bore and the recess, the entry opening of the internal bore formed only in the top surface of the top wall (see Fig. 12 below), the recess sized and shaped to accommodate a screw head of a screw, and the exit opening formed at least partially in the bottom surface of the top wall and at least partially in a side surface (see Fig. 12 below) of the top wall; wherein the intervertebral implant does not include a faceplate to retain the screw in the internal screw guide.

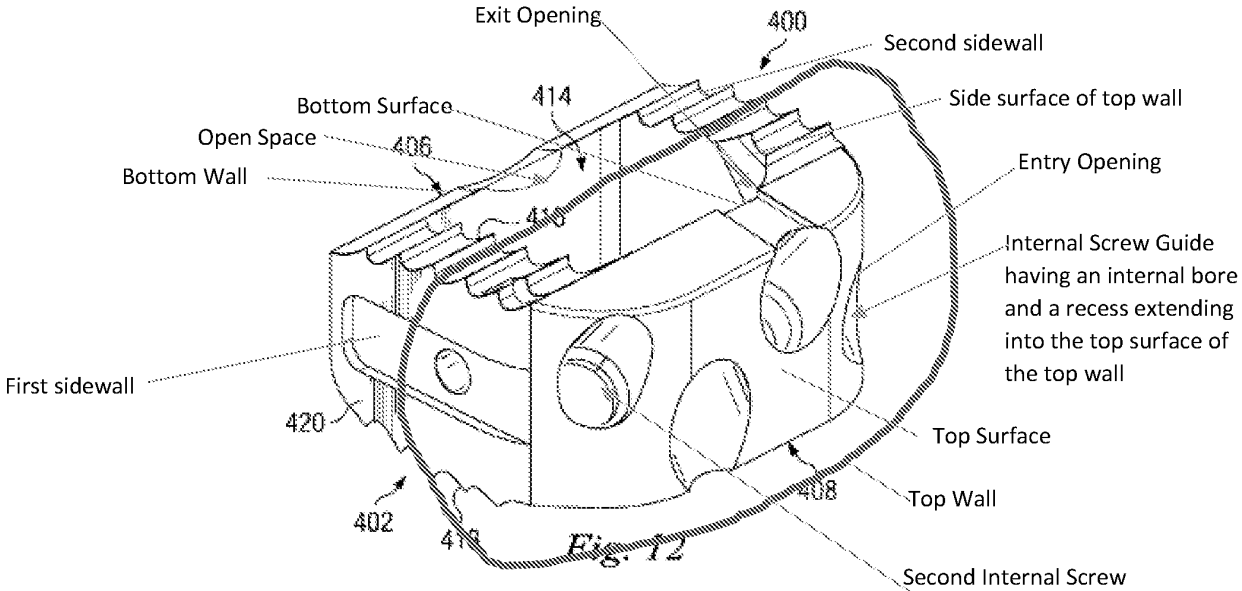

Exit Opening
400
Second sidewall
Bottom Surface
414
Side surface of top wall
Open Space
406
Entry Opening
Bottom Wall
410
Internal Screw Guide having an internal bore and a recess extending into the top surface of the top wall
First sidewall
420
Top Surface
408
Top Wall
402
Second Internal Screw Guide having an internal bore and a recess extending into the top surface of the top wall

Fig. 12

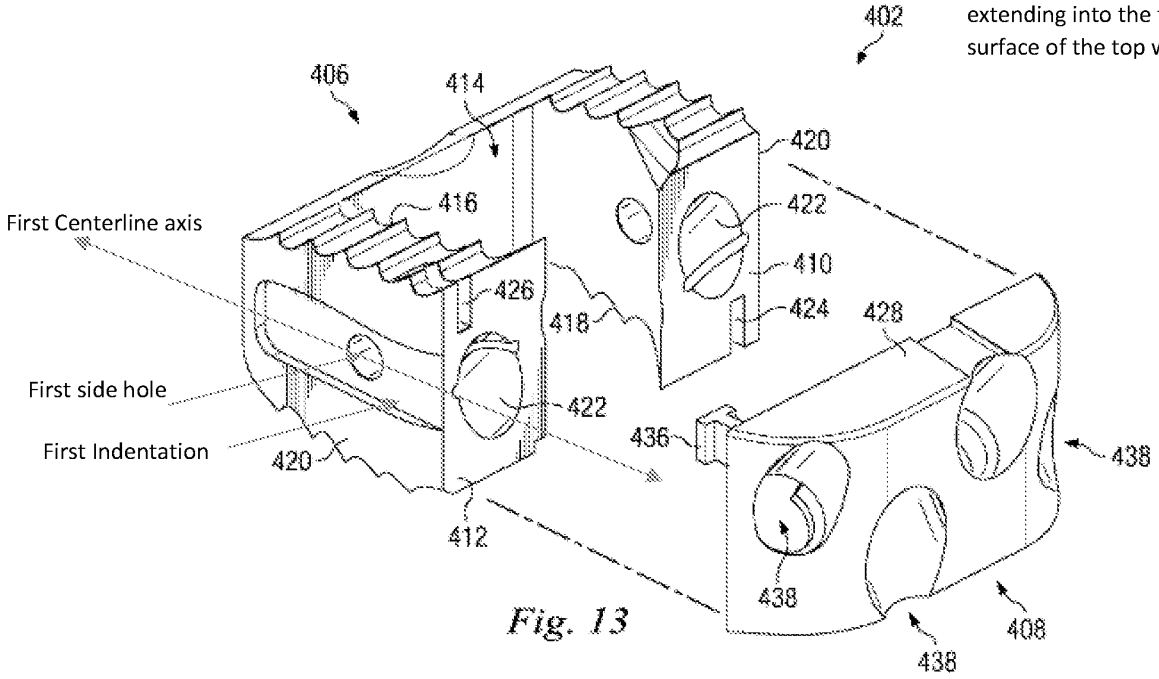

402
406
414
420
First Centerline axis
416
422
410
426
418
424
428
First side hole
422
436
438
First Indentation
420
412
438
408
438

Fig. 13

Concerning claim 22, wherein the internal bore is coaxial with the recess (see Fig. 12 above).

Concerning claim 23, wherein the internal screw guide extends through an entire depth of the top wall from the top surface to the bottom surface and exiting at least partially into the open space (see Fig. 12 above).

Concerning claim 24, wherein the intervertebral implant is configured to be inserted into a disc space between a first vertebral body and a second vertebral body and to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion (see col. 9).

Concerning claim 25, wherein each of the first sidewall and the second sidewall has a surface positioned opposite to a first surface configured to contact one of the first vertebral body and a second surface of the second vertebral body when the intervertebral implant is inserted into the disc space (see Fig. 12).

Concerning claim 26, wherein the surfaces of the first sidewall and the second sidewall include surface features (416), and wherein the surface features include a plurality of ridges for contacting the first vertebral body and a second vertebral body.

Concerning claim 28, wherein the side surface of the top wall is patterned with a plurality of surface features (416) to create a rough side surface.

Concerning claim 30, wherein the internal screw guide is a first internal screw guide, and the intervertebral implant further comprises: at least a second internal screw guide (see Fig. 12 above) having a second internal bore with a second entry opening and a second exit opening, the second entry opening formed within a second recess formed in the top wall and extending into the top surface of the top wall and oriented in a different direction than the internal bore of the first internal screw guide.

Concerning claim 32, further comprising: a first indentation (see Fig. 12 above) on a first outer side surface of the first sidewall;

a second indentation on a second outer side surface of the second sidewall, wherein the second indentation is positioned opposite of the first stet indentation; a first circular side hole (see Fig. 12 above) extending into the first outer side surface of the first sidewall; a second circular side hole extending into the second outer side surface of the second sidewall, wherein the second circular side hole is positioned opposite of the first circular side hole, wherein the first indentation and the first circular side hole are both positioned along a first centerline axis (see Fig. 12 above) that bisects the first sidewall, and wherein the second indentation and the second circular side hole are both positioned along a second centerline axis that bisects the second sidewall.

Concerning claim 41, wherein the side surface of the top wall and a side surface of the bottom wall are each patterned with a plurality of surface features (see Fig. 12, element 416) to create a rough side surface of the intervertebral cage.

Concerning claim 42, wherein at least some of the plurality of surface features (see Fig. 12 below) are positioned on the side surface of the top wall closer to the top surface of the top wall than the exit opening.

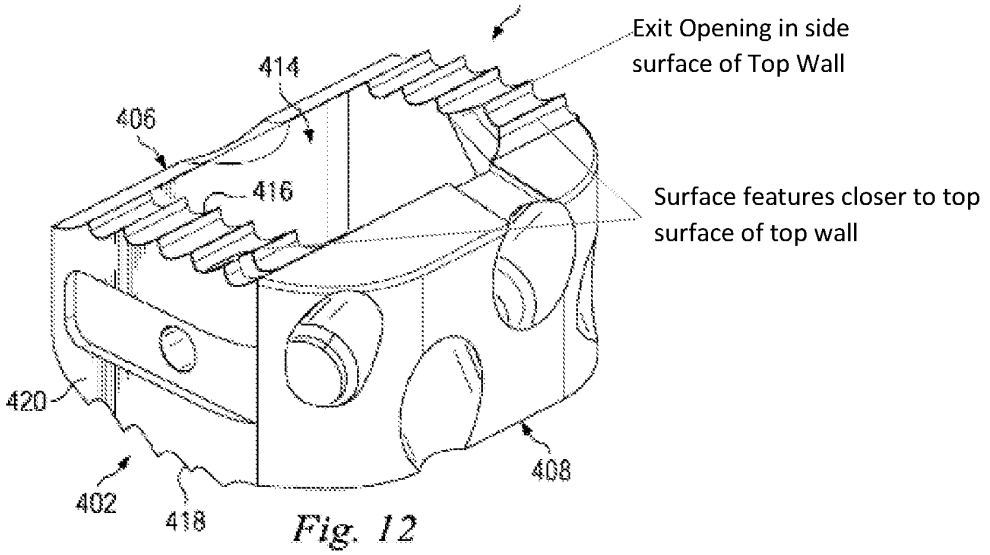


Fig. 12

Concerning claim 43, wherein the plurality of surface features are ridges (see Fig. 12 above) extending from the side surface of the top wall and the side surface of the bottom wall, the ridges positioned around the open space capable of receiving bone filling for biological bone fusion.

Claim Rejections - 35 USC § 103

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries for establishing a background for determining obviousness under pre-AIA 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 33, 34 and 36 is/are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Waugh et al. (U.S. 8,268,000 B2) in view of Waugh et al. (U.S. 2008/0249569 A1).

Concerning claim 33, Waugh et al. disclose an implant system comprising: a top wall (see Fig. 12 above) including a top surface (see Fig. 12 above) and a bottom surface (see Fig. 12 above) opposite the top surface; a bottom wall (see Fig. 12 above) opposite the top wall; a first sidewall (see Fig. 12 above); a second sidewall (see Fig. 12 above) opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall define an open space (see Fig. 12 above) capable of receiving bone filling for biological bone fusion, and wherein the first sidewall and the second sidewall each defines an aperture (see Fig. 13 above) through an outer side surface to an opposite inner side surface, the aperture connected to the open space and configured to promote biological bone fusion through the first sidewall and the second sidewall; and an internal screw guide (see Fig. 13 below) having an internal bore (see Fig. 13 below) and a recess (see Fig. 13 below) extending into the top surface of the top wall, the internal bore having an entry opening (see Fig. 13 below) and an exit opening (see Fig. 13 below), the entry opening of the internal bore formed adjacent to the recess, the recess sized and shaped to accommodate a screw head, and the exit opening formed at least partially in the bottom surface (see Fig. 13 below) of the top wall and at least partially in a side surface (see Fig. 13 below) of the top wall; the intervertebral implant including a first indentation (see Fig. 13 below) on a first surface of the intervertebral implant and a second indentation on a second surface of the intervertebral implant.

However, Waugh et al. do not explicitly disclose a tool comprising: an elongate shaft having a first end and a second end; and a gripper at the first end of the elongate shaft, the gripper comprising a first prong and a second prong, wherein the first prong and the second prong are capable of respectively engaging the first indentation and the second indentation of the intervertebral implant.

Waugh et al. disclose an implant system comprising a tool (see Fig. 6 and par. 0038) comprising: an elongate shaft having a first end and a second end; and a gripper at the first end of the elongate shaft, the gripper comprising a first prong and a second prong, wherein the first prong and the second

prong are capable of respectively engaging a first indentation and a second indentation of an intervertebral implant in the same field of endeavor for the purpose of inserting the implant.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Waugh's system include an implantation tool, as taught by Waugh et al., for implanting the spinal implant. The use of implantation tools having prongs received within slots located on the sides of fusion implants is well known in the art as also evidenced by Biedermann et al. (U.S. 2009/0030520 A1, element 14).

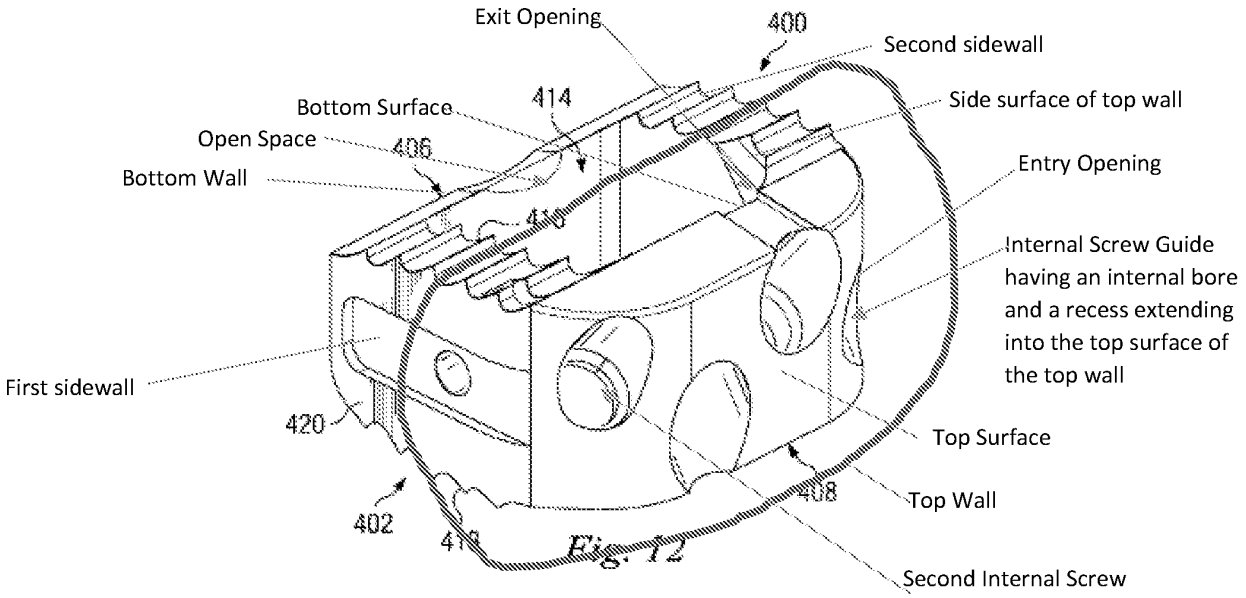

Exit Opening
400
Second sidewall
Bottom Surface
414
Side surface of top wall
Open Space
406
Entry Opening
Bottom Wall
410
Internal Screw Guide having an internal bore and a recess extending into the top surface of the top wall
First sidewall
420
Top Surface
408
Top Wall
402
Second Internal Screw Guide having an internal bore and a recess extending into the top surface of the top wall

Fig. 12

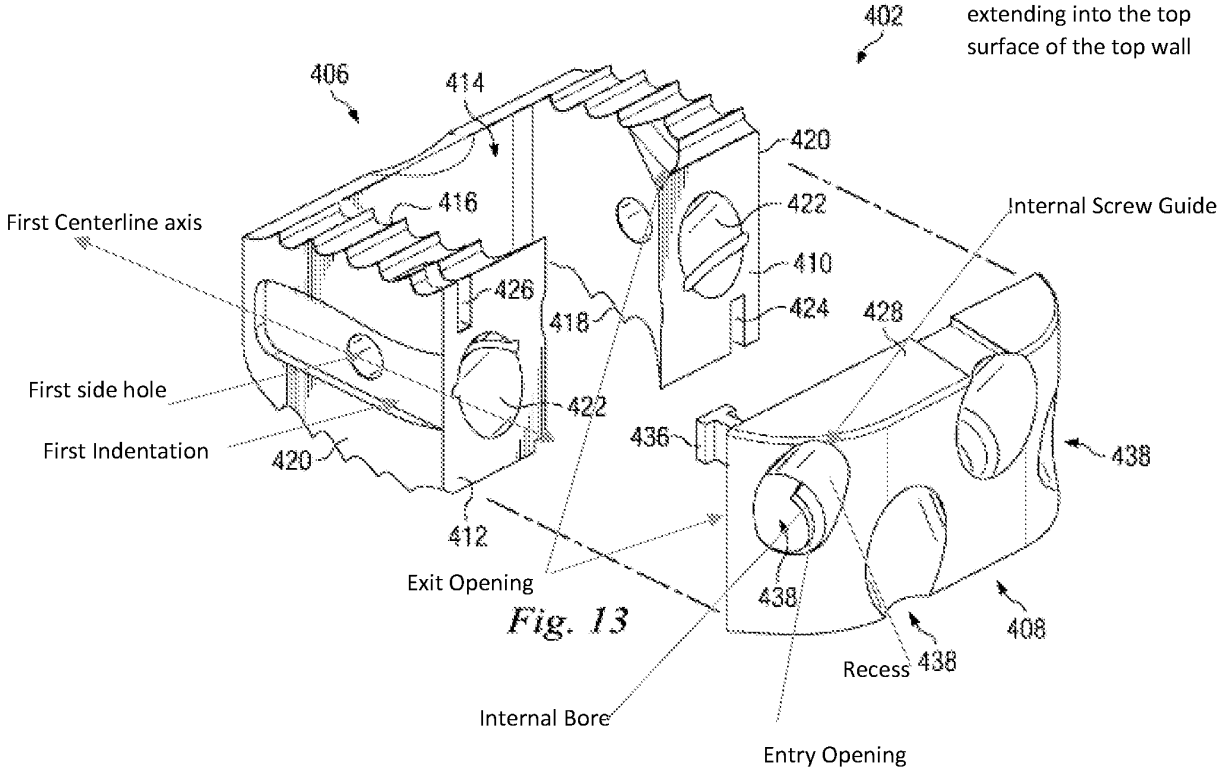

402
406
414
420
First Centerline axis
416
422
Internal Screw Guide
410
426
418
424
428
First side hole
422
436
438
First Indentation
420
412
Exit Opening
438
408
Recess
438
Internal Bore
Entry Opening

Fig. 13

Concerning claim 34, wherein the internal screw guide is a first internal screw guide having a first internal bore, and the intervertebral implant further comprises a second internal screw guide having a second internal bore configured to orient a screw in a different direction than the first internal bore, the implant assembly further comprising: a first screw disposed in the first internal screw guide and at least partially within the intervertebral implant; and a second screw disposed in the second internal screw guide and at least partially within the intervertebral implant; wherein each of the first internal screw guide and second internal screw guide is angled to bi-directionally orient the first screw and the second screw in opposite directions (see col. 9, lines 28-33).

Concerning claim 36, wherein the first internal screw guide has a first angle with respect to the top wall of the intervertebral implant and the second internal screw guide has a second angle with respect to the top wall of the intervertebral implant, and wherein the first angle and the second angle extend through opposite sides of the intervertebral implant (see col. 9, lines 28-33).

Claims 45-49 is/are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Waugh et al. (U.S. 8,268,000 B2) in view of Ferree (U.S. 2004/0122424 A1).

Concerning claim 45-47, Waugh et al. disclose an intervertebral implant system comprising: a top wall (see Fig. 12 above) including a top surface (see Fig. 12 above) and a bottom surface (see Fig. 12 above) opposite the top surface; a bottom wall (see Fig. 12 above) opposite the top wall; a first sidewall (see Fig. 12 above); a second sidewall (see Fig. 12 above) opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall define an open space (see Fig. 12 above) capable of receiving bone filling for biological bone fusion; and an internal screw guide (see Fig. 12 above) having an internal bore (see Fig. 13 above) and a recess (see Fig. 13 above) extending into the top surface of the top wall, the internal bore having an entry opening (see Fig. 12 above) and an exit opening (see Fig. 12 above), the entry opening of the internal bore formed at a juncture between the internal bore and the recess, the entry opening of the internal bore formed only in the top surface of the top wall, the recess

sized and shaped to accommodate a screw head, and the exit opening formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall (see Fig. 13 above).

However, Waugh et al. do not explicitly disclose a substantially circular opening formed in a substantially rectangular opening extending substantially normally into the top surface of the top wall.

Ferree teach an intervertebral implant system comprising a substantially circular opening (see Fig. 2A, receiving element 222) formed in a substantially rectangular opening extending substantially normally into the top surface of the top wall in the same field of endeavor for the purpose of connecting two fusion bodies together.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Waugh's system to include a substantially circular opening formed in a substantially rectangular opening extending substantially normally into the top surface of the top wall, as taught by Ferree, in order to provide an engagement point for a connection bar to hold two implants together. Depending on the particular location and damage to the adjacent vertebral bodies one of ordinary skill in the art would find it obvious to modify implant size shape to properly address the spinal conditions of the particular patient. It may also be necessary to leave a middle portion of the adjacent vertebrae untouched due to anatomy or previous injury thereby requiring two smaller size implants connected to each other. Those of ordinary skill in the art find it an obvious matter of design choice to one skilled in the art at the time the invention was made to change the implant shape from arcuate to box-like, since applicant has not disclosed that such solve any stated problem or is anything more than one of numerous shapes or configurations a person ordinary skill in the art would find obvious for the purpose of forming a fusion implant. In re Dailey and Eilers, 149 USPQ 47 (1966). Additionally, a change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955). Finally, it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. Nerwin v. Erlichman, 168 USPQ 177, 179.

Concerning claim 48, wherein the intervertebral implant system does not include a faceplate to retain the screw head in the internal screw guide (see Fig. 12).

Concerning claim 49, wherein the top surface of the top wall meets the outer side surfaces of the first and second sidewalls at a corner that is substantially perpendicular (see Fig. 12).

Response to Arguments

Applicant's arguments filed 12/09/2022 have been considered but are moot because the new ground of rejection does not rely on any reference applied in the prior rejection of record for any teaching or matter specifically challenged in the argument.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELLEN HAMMOND whose telephone number is (571)270-3819. The examiner can normally be reached Monday-Friday 8 - 4 PM .

If attempts to reach the examiner by telephone are unsuccessful, ***please contact*** **the examiner's supervisor, Eduardo C. Robert, *at* 571 272-4719**. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ELLEN C HAMMOND/
Primary Examiner, Art Unit 3773

Notice of References Cited	Application/Control No. 17/706,873	Applicant(s)/Patent Under Reexamination Moskowitz et al.	
	Examiner ELLEN C HAMMOND	Art Unit 3773	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20080249575-A1	10-2008	Waugh; Lindsey G.	A61F2/447	606/301
*	B	US-6629998-B1	10-2003	Lin; Chih-I	A61F2/447	623/17.11
*	C	US-8268000-B2	09-2012	Waugh; Lindsey G.	A61F2/4465	623/17.16
*	D	US-20090030520-A1	01-2009	Biedermann; Lutz	A61F2/4455	606/301
*	E	US-20040122424-A1	06-2004	Ferree, Bret A.	A61F2/2846	606/279
*	F	US-20080249569-A1	10-2008	Waugh; Lindsey G.	A61F2/447	606/249
	G					
	H					
	I					
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	K					
	L					
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FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

CPC - Searched*		
Symbol	Date	Examiner
A61F2/447 and 4455	09/14/2022	ECH
A61F2002/448	09/14/2022	ECH
Above - UPDATED	12/23/2022	ECH

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
IPR2020-01307 Reviewed Inter Partes Review of U.S. Patent No. 8,353,913	09/14/2022	ECH
IPR2020-01308 Reviewed Inter Partes Review of U.S. Patent No. 9,889,022	09/14/2022	ECH
Performed an inventor and assignee search. Reviewed Dossier references. Reviewed cited references in family. Performed a text search in ip.com.	09/14/2022	ECH

/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/14/2022	12/23/2022							
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	2	-	-							
	3	-	-							
	4	-	-							
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	31	N	-							
	32	✓	✓							
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	35	✓	-							
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	38	-	-							
	39	-	-							
	40	-	-							
	41	✓	✓							
	42	✓	✓							

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	**Art Unit**
	ELLEN C HAMMOND	3773

CLAIM		DATE								
Final	Original	09/14/2022	12/23/2022							
	43	✓	✓							
	44	✓	-							
	45		✓							
	46		✓							
	47		✓							
	48		✓							
	49		✓							

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L76	535	a61f2/447,4455.cpc. AND @pd>="20220914"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/12/22 01:51 PM
L77	21	a61f2002/448.cpc. AND @pd>="20220914"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/12/22 02:05 PM
L78	36	(Artificial Intelligence) Similar to: 17/706,873 with 0 CPC Selections and 0 Text Selections Text: (US-20220218498-A1 OR US-9889022-B2 OR US-10390969-B2 OR US-20220023060-A1 OR US-9005293-B2 OR US-9907674-B2 OR US-20130023991-A1 OR US-20130282017-A1 OR US-20200253747-A1 OR US-20130053962-A1 OR US-20110295371-A1 OR US-9867719-B2 OR US-9848998-B2 OR	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN))	OR	ON	ON	2022/12/22 02:44 PM

		US-20080033440-A1 OR US-10064738-B2 OR US-10537442-B2 OR US-20180325697-A1 OR CA-2512142-A1 OR US-20100222785-A1 OR DE-69533780-T2 OR US-20180168824-A1 OR US-20190175361-A1 OR US-20220133489-A1 OR US-20060161258-A1 OR BR-0210067-A OR US-20130018468-A1 OR US-7942903-B2 OR US-9301854-B2 OR US-20060190085-A1 OR US-20090224023-A1 OR EP-0967926-B1 OR GR-1000872-B OR CA-2282310-A1 OR WO-2015169453-A3 OR US-10307268-B2 OR US-7846188-B2 OR CA-2476731-A1 OR CN-101146486-B OR US-8273086-B2 OR AR-034061-A1 OR CN-101146486-A OR WO-0103570-A3 OR WO-03071962-A3 OR ES-2202575-T3 OR US-20140249629-A1 OR WO-02096310-A8 OR MX-PA03010886-A OR US-20110137349-A1 OR WO-9837825-A1 OR EP-0967926-A1).did.					
L79	37	(Artificial Intelligence) More like doc: US-20040122424-A1 Text: (WO-9520370-A1 OR US-20220218498-A1 OR US-8652177-B1 OR US-20210315711-A1 OR US-20170135825-A1 OR US-10195047-B2 OR US-9566090-B1 OR US-8147521-B1 OR US-20190201211-A1 OR US-5443515-A OR US-11013611-B2 OR US-20140277494-A1 OR US-5246458-A OR	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/12/22 02:48 PM

		US-20160158024-A1 OR WO-0215825-A1 OR US-6666888-B1 OR JP-2009513194-A OR CH-672588-A5 OR US-6149651-A OR US-20080208345-A1).did.					
L80	39	(Artificial Intelligence) More like doc: US-20080249569-A1 Text: (WO-2008124355-A1 OR AU-2008237452-A1 OR EP-2131791-A1 OR EP-2131791-B1 OR JP-2010523216-A OR JP-5395054-B2 OR US-20080249575-A1 OR US-8425607-B2 OR CN-101677863-A OR JP-5681636-B2 OR US-20090105831-A1 OR US-20160317321-A1 OR CN-105055054-A OR CN-105055054-B OR US-6629998-B1 OR CA-2743247-A1 OR CN-102256570-A OR US-20210330464-A1 OR CN-102256570-B OR US-20140214166-A1).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/12/22 02:51 PM
L82	32	(Artificial Intelligence) More like doc: US-6629998-B1 Text: (EP-1266642-A1 OR US-10531960-B2 OR KR-20110081351-A OR US-20150216675-A1 OR JP-2012508043-A OR RU-2506930-C2 OR US-10433976-B2 OR US-20100145459-A1 OR EP-2352462-A1 OR US-20100145460-A1 OR US-20130268008-A1 OR US-20160317321-A1 OR US-20160324662-A1 OR EP-3788973-A1 OR RU-2011122797-A OR JP-5681636-B2 OR JP-2012508044-A OR EP-3219293-B1 OR WO-2011008864-A1 OR US-20110015745-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/12/22 02:55 PM

		A1).did.					
L84	35	(Artificial Intelligence) More like doc: US-8268000-B2 Text: (US-20080249625-A1 OR EP-2131791-A1 OR US-8425607-B2 OR AU-2008237452-A1 OR WO-2008124355-A1 OR US-20080249575-A1 OR CN-103338727-B OR EP-2131791-B1 OR CN-103338727-A OR EP-2866745-B1 OR AU-2013282268-A1 OR US-20140012380-A1 OR US-20160081816-A1 OR JP-5395054-B2 OR US-20170128229-A1 OR JP-2010523216-A OR EP-2667826-A2 OR US-20120197401-A1 OR WO-2012103351-A2 OR US-20140214166-A1).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/12/22 03:19 PM
L86	35	(Artificial Intelligence) More like doc: US-8268000-B2 Text: (US-20080249625-A1 OR EP-2131791-A1 OR US-8425607-B2 OR AU-2008237452-A1 OR WO-2008124355-A1 OR US-20080249575-A1 OR CN-103338727-B OR EP-2131791-B1 OR CN-103338727-A OR EP-2866745-B1 OR AU-2013282268-A1 OR US-20140012380-A1 OR US-20160081816-A1 OR JP-5395054-B2 OR US-20170128229-A1 OR JP-2010523216-A OR EP-2667826-A2 OR US-20120197401-A1 OR WO-2012103351-A2 OR US-20140214166-A1).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/12/22 03:39 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

26191 7590 02/24/2023

FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
HAMMOND, ELLEN CHRISTINA	

ART UNIT	PAPER NUMBER
3773	

NOTIFICATION DATE	DELIVERY MODE
02/24/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Applicant-Initiated Interview Summary	Application No. 17/706,873	Applicant(s) Moskowitz et al.		
	Examiner ELLEN C HAMMOND	Art Unit 3773	AIA (First Inventor to File) Status No	Page 1 of 2

All Participants (applicant, applicants representative, PTO personnel)	Title	Type
ELLEN C HAMMOND	Primary Examiner	Telephonic
Kiersten Batzli	Attorney of Record	

Date of Interview: 17 February 2023

Issues Discussed:

35 U.S.C. 112

The impossibility of the claimed entry opening formed at a juncture between the internal bore and the recess and also formed only in the top surface of the top wall was discussed.

35 U.S.C. 103

Proposed amendments to claim 33 do not overcome the 103 rejection. It was noted that Waugh's indentations have a portion that is closer to a juncture of the first surface with the top wall than to a juncture of the first surface with the bottom wall. See Fig. 12 and note the point on the indentation located closest to end 408.

Drawings

As stated in the Final OA the examiner noted that reference numbers 248, 240, 242, 250 in amended Fig . 2C do not point to relevant structure. Additionally, the drawings fail to illustrate an entry opening of the internal bore that is formed only in the top surface of the top wall AND formed at a juncture between the internal bore and the recess. The drawings fail to show any structural difference between the internal bore and the internal screw guide.

Other

The examiner invites Applicant to contact her for another interview to discuss claim amendments prior to formal filing.

/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant-Initiated Interview Summary	**Application No.** 17/706,873	**Applicant(s)** Moskowitz et al.		
	Examiner ELLEN C HAMMOND	**Art Unit** 3773	**AIA (First Inventor to File) Status** No	**Page** **2 of 2**

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/706,873	Filing Date 03/29/2022	☐ To be Mailed

ENTITY: ☐ LARGE ☑ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $240 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	03/21/2023	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 21	Minus	** 20	= 1		x $40 =	40
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $192 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	40

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/ZETA T ADAMS/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Request for Continued Examination (RCE) Transmittal

Address to:
Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Application Number	17/706,873
Filing Date	March 29, 2022
First Named Inventor	Ahmnon D. Moskowitz
Art Unit	3773
Examiner Name	Ellen Christina Hammond
Attorney Docket Number	46440-0009017

This is a Request for Continued Examination (RCE) under 37 CFR 1 .114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. Submission required under 37 CFR 1.114 Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

   a. ☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

      i. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

      ii. ☐ Other _____

   b. ☒ Enclosed

      i. ☒ Amendment/Reply

      ii. ☐ Affidavit(s)/ Declaration(s)

      iii. ☐ Information Disclosure Statement (IDS)

      iv. ☒ Other Replacement Drawings

2. Miscellaneous

   a. ☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

   b. ☐ Other _____

3. Fees The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.
   The Director is hereby authorized to charge the following fees any underpayment of fees, or credit any overpayments to

   a. ☒ Deposit Account No. 06-1050.

      i. ☒ RCE fee required under 37 CFR 1.17(e)

      ii ☐ Extension of time fee (37 CFR 1.136 and 1.17)

      iii ☒ Other any deficiencies

   b. ☐ Check in the amount of $ _____ enclosed

   c. ☐ Payment by credit card (Form PTO-2038 enclosed)

   d. ☒ Payment by EFS-Web

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Signature	/Kiersten M. Batzli/	Date	March 21, 2023
Name (Print/Type)	Kiersten M. Batzli	Registration No.	75,476

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this correspondence is being EFS-Web transmitted to the United States Patent and Trademark Office (USPTO), deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 or facsimile transmitted to the USPTO on the date shown below.

Signature			
Name (Print/Type)		Date	

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	:	Ahmnon D. Moskowitz	Art Unit	:	3773
Application No.	:	17/706,873	Examiner	:	Ellen Christina Hammond
Filed	:	March 29, 2022			
			Conf. No.	:	1103
Title	:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION			

MAIL STOP AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY TO ACTION OF DECEMBER 30, 2022

Please consider the following reply.

Amendments to the Drawings:

The attached replacement sheets of drawings (3) includes changes to Figs. 2A-2C and replace the original sheets including Figs. 2A-2C.

In Figures 2A-2C, reference numerals and lead lines are added to correspond to the reference numerals associated with the structures recited in the claims in newly amended paragraph [0064.1].

Attachments following last page of this Amendment:

Replacement Sheet (3 pages including Figs. 2A, 2B, and 2C)

REMARKS

Claims 21-26, 28, 30, 32-34, 36, 41-43 and 45-50 are pending, and claims 21, 33 and 45 are independent. Claims 21-23, 30, 33-34, 36, and 45 are amended, and new claim 50 is added. The amendments and new claims are supported by the specification and drawings as filed, and no new matter is added.

Summary of Examiner Interview

Applicant thanks Examiner Hammond for the courtesies extended during the telephonic interview held on February 17, 2023 between Examiner Hammond and the undersigned. During the interview, the objections to the specification and drawings were discussed, and possible amendments to the claims were discussed in view of the art. Examiner Hammond provided helpful suggestions but no agreement was reached as to specific amendment language. The drawings and claims have been amended herein based on the discussion in the telephonic interview.

Objections to the Specification

The specification was objected to as failing to provide proper antecedent basis for the claimed subject matter. Applicant has amended the specification based on the examiner's suggestions as discussed in the interview of February 17, 2023. The amendment to the specification replaces paragraph [0064.1] as added in the office action response of December 9, 2022. The amended paragraph [0064.1] references the structures recited in the amended claims as they appear in Figs. 2A-2C. No new matter is added by the amendment to the specification.

Applicant has also amended the title of the application to reflect the claimed subject matter. This amendment to the title was previously requested in the preliminary amendment of March 29, 2022.

Applicant respectfully requests withdrawal of the objection to the specification in view of the amendments to the specification.

Objections to the Drawings

The drawings were objected to as failing to show each and every feature of the invention specified in the claims. Applicant has amended Figs. 2A, 2B, and 2C to include reference numerals and lead lines corresponding to the structures recited in the amended claims, which is further described in amended paragraph [0064.1]. The replacement sheets (3) including Figs. 2A-2C are submitted herewith. No new matter is added by the amendment to the drawings.

Applicant respectfully requests withdrawal of the objection to the drawings in view of the amended drawings submitted herewith.

Claim Rejections - 35 USC § 112

Claims 21-26, 28, 30, 32 41-43 and 45-49 are rejected under 35 U.S.C. § 112(b) as being indefinite. Claims 21 and 45 have been amended to clarify the claimed subject matter. Applicant respectfully requests reconsideration and withdrawal of the rejections under § 112(b) in view of the claim amendments.

35 U.S.C. §§ 102 and 103

Claim(s) 21-26, 28, 30, 32 and 41-43 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 8,268,000 ("Waugh '000"). Claims 33, 34 and 36 were rejected under 35 U.S.C. § 103 as being unpatentable over Waugh '000 in view of U.S. Patent Application Publication No. 2008/0249569 ("Waugh 2008"). Claims 45-49 were rejected under 35 U.S.C. § 103 as being unpatentable over Waugh '000 in view of U.S. Patent Application Publication No. 2004/0122424 ("Ferree").

A. Claim 21

Claim 21 recites, *inter alia*, an intervertebral implant with specific structure and "wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure." Waugh '000 fails to teach or suggest at least these features of claim 21.

Waugh '000 describes implants having "a first portion formed of a first material and a second portion formed of a second material." Waugh '000, Abstract. "The first portion 406 is a U-shaped element having a first end 410 and a second end 412 (shown in FIG. 13) that form end

surfaces, with the second portion 408 extending from one of the first and second ends 410, 412 to the other." Waugh '000, 9:11-15. Rather than being formed as a unitary structure, in Waugh '000's implant, "the first and second portions 406, 408 together define a hollow region 414." Waugh '000, 9:16-17.

Accordingly, Waugh '000 does not disclose at least "wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure," as recited by claim 21. Further, Waugh '000 does not suggest forming the implants as a unitary structure. Claims 22-26, 28, 29-30, 32 and 41-43 depend, directly or indirectly, from claim 21, and are patentable over Waugh '000 for at least the same reasons, as well as for the combinations recited therein.

B. Claim 33

Claim 33 recites, *inter alia*, "wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure." For the reasons described above with regard to claim 21, Waugh '000 does not disclose at least "wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure," as recited by claim 33. Ferree fails to remedy the deficiencies of Waugh '000.

Additionally, claim 33 recites, *inter alia*, "the intervertebral implant including a first indentation on a first surface of the intervertebral implant and a second indentation on a second surface of the intervertebral implant, the first indentation formed on the first surface and bounded by a top boundary and a bottom boundary, the bottom boundary of the first indentation positioned closer to a juncture of the first surface with the top wall than to a juncture of the first surface with the bottom wall." Waugh '000 fails to disclose or suggest at least this feature of claim 33.

The Office points to the elongated slot depicted on the sidewall of Waugh '000's implant illustrated in FIG. 13 as the alleged "first indentation." Office Action, 10, 12. However, the elongated slot of Waugh '000's implant extends along the sidewall from the top of the U-shaped first portion to nearly the bottom of the first portion. *See* Waugh '000, FIG. 13. Waugh '000 fails to disclose or suggest "the intervertebral implant including a first indentation on a first surface of the intervertebral implant and a second indentation on a second surface of the intervertebral implant, the first indentation formed on the first surface and bounded by a top

boundary and a bottom boundary, the bottom boundary of the first indentation positioned closer to a juncture of the first surface with the top wall than to a juncture of the first surface with the bottom wall," as recited by claim 33. Waugh 2008 and Ferree fail to remedy the deficiencies of Waugh '000.

Accordingly, claim 33 is patentable over the prior art of record. Claims 34 and 36 depend, directly or indirectly, from claim 33 and are patentable over the prior art of record for at least the same reasons, as well as for the combinations recited therein.

C. Claim 45

Claim 45 recites, *inter alia*, "wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure." For the reasons described above with regard to claim 21, Waugh '000 does not disclose at least "wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure," as recited by claim 45. Ferree fails to remedy the deficiencies of Waugh '000.

Additionally, the Office's combination of Waugh '000 and Ferree is fatally flawed. The Office concedes that Waugh '000 fails to disclose "a substantially circular opening extending substantially normally into the top surface of the top wall," as recited by claim 45, but relies on Ferree for this feature, stating that "it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Waugh's system to include a substantially circular opening formed in a substantially rectangular opening extending substantially normally into the top surface of the top wall, as taught by Ferree, in order to provide an engagement point for a connection bar to hold two implants together." Office Action, 14. However, Waugh '000's interbody spacer is "an implantable prosthetic device … used to maintain the vertebral spacing and provide vertebral support" and is "[s]ized to fit the disc space height... [such that] the implantable device 100 provides support and stabilization to the vertebrae." Waugh '000, 3:45-52; *see also* FIG. 2.

Waugh '000's implantable device includes first and second portions, but is already sized to fit the vertebral space and there would be no reason to combine multiple of Waugh '000's implantable device together as the Office contends. Waugh '000, 3:45-52, 9:11-17. The Office has failed to show that combining multiple versions of Waugh '000's implant device in the same

disk space would fit safely, or at all. The Office's alleged motivation to implement Ferree's cage fastening mechanism on Waugh '000's implantable device does not make sense in the context of Waugh's vertebral interbody spacer, and, moreover, using more that one of Waugh '000's interbody spacers held together with Ferree's connector would impermissibly change the mode of operation of Waugh '000's device which is designed to fill the intervertebral space itself. *See* MPEP 2143.01(VI) ("If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious.").

Waugh 2008, cited with regard to various other claims, fails to remedy the deficiencies of Waugh '000 and Ferree.

Accordingly, claim 45 is patentable over the prior art of record. Claims 46-49 depend, directly or indirectly, from claim 45, and are patentable over the prior art of record for at least the same reasons, as well as for the combinations recited therein

In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. §§ 102 and 103.

New Claim

New claim 50 depends from claim 21 and is patentable over the prior art of record for at least the same reasons, as well as for the combinations recited therein.

CONCLUSION

By responding in the foregoing remarks only to particular positions taken in the action, Applicant does not acquiesce with other positions that have not been explicitly addressed. In addition, Applicant's selecting some particular arguments for the patentability of a claim should not be understood as implying that no other reasons for the patentability of that claim exist. Finally, Applicant's decision to amend or cancel any claims should not be understood as implying that Application agrees with any positions taken in the action with reference to that claim or other claims, or that Applicant adopts or agrees with any position except as specifically

stated in this paper. In particular, by amending a claim, Applicant does not necessarily concede that the claim prior to amendment was unpatentable.

The fees for excess claims are being paid with this reply on the Electronic Filing System. Apply those fees and any other necessary charges or credits to Deposit Account 06-1050, referencing the above attorney docket number.

Respectfully submitted,

Date: March 21, 2023

/Kiersten M. Batzli/
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100796180.doc

Electronic Patent Application Fee Transmittal	
Application Number:	17706873
Filing Date:	29-Mar-2022
Title of Invention:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION
First Named Inventor/Applicant Name:	Ahmnon D. Moskowitz
Filer:	Kiersten M. Batzli/Emily Whitcomb
Attorney Docket Number:	46440-0009017
Filed as Small Entity	
Filing Fees for Utility under 35 USC 111(a)	

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	1	40	40
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
RCE- 1ST REQUEST	2801	1	544	544
		Total in USD ($)		**584**

Electronic Acknowledgement Receipt	
EFS ID:	47719156
Application Number:	17706873
International Application Number:	
Confirmation Number:	1103
Title of Invention:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION
First Named Inventor/Applicant Name:	Ahmnon D. Moskowitz
Customer Number:	26191
Filer:	Kiersten M. Batzli/Emily Whitcomb
Filer Authorized By:	Kiersten M. Batzli
Attorney Docket Number:	46440-0009017
Receipt Date:	21-MAR-2023
Filing Date:	29-MAR-2022
Time Stamp:	16:27:29
Application Type:	Utility under 35 USC 111(a)

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Payment Type	DA
Payment was successfully received in RAM	$584
RAM confirmation Number	E20233KG28285515
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Drawings-only black and white line drawings	ReplacementDrawing.pdf	910608 6d7cf80ce426eaa844d4b24282f0276fc7673c20	no	3
Warnings:					
Information:					
2	Request for Continued Examination (RCE)	RCE.PDF	97687 26cc7061916c4ec3eacd7b599f76659733d37896	no	1
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
3		ReplytoOA.PDF	172485 8c9d6232f8259881289975ded8a53ad2bef251c7	yes	17

Multipart Description/PDF files in .zip description

Document Description	Start	End
Amendment Submitted/Entered with Filing of Continued Prosecution Application (CPA)/Request for Continued Examination(RCE)	1	1
Claims	2	10
Drawings-only black and white line drawings	11	11
Applicant Arguments/Remarks Made in an Amendment	12	17

Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	40879 abeaba55e560944d6eb85d46584246b3f9a43972	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1221659		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

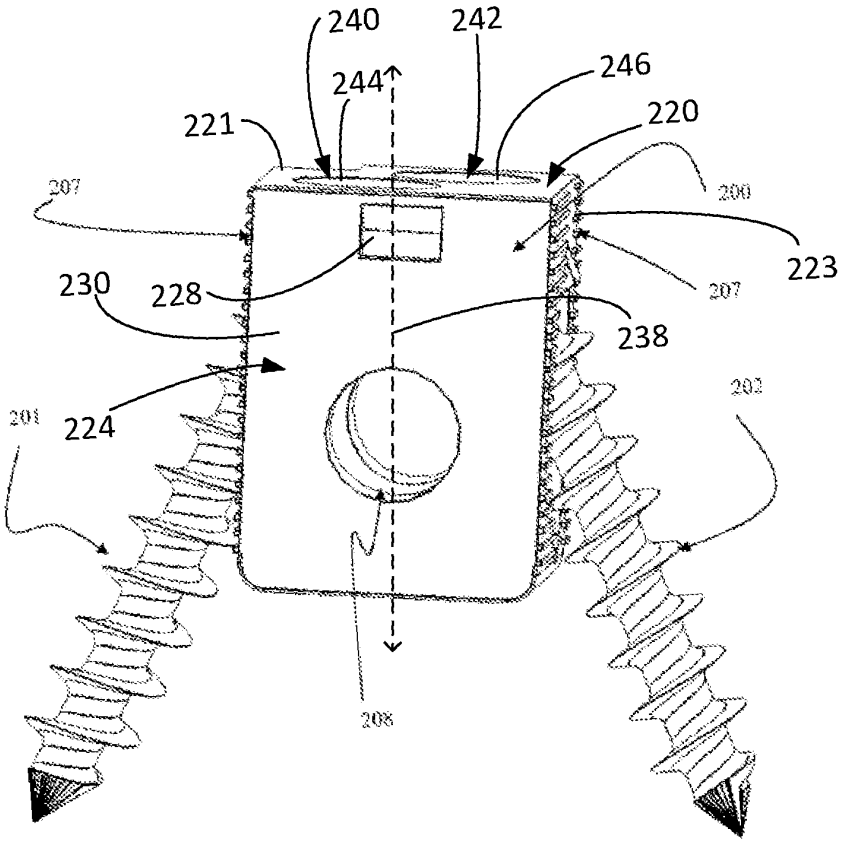


Fig. 2A

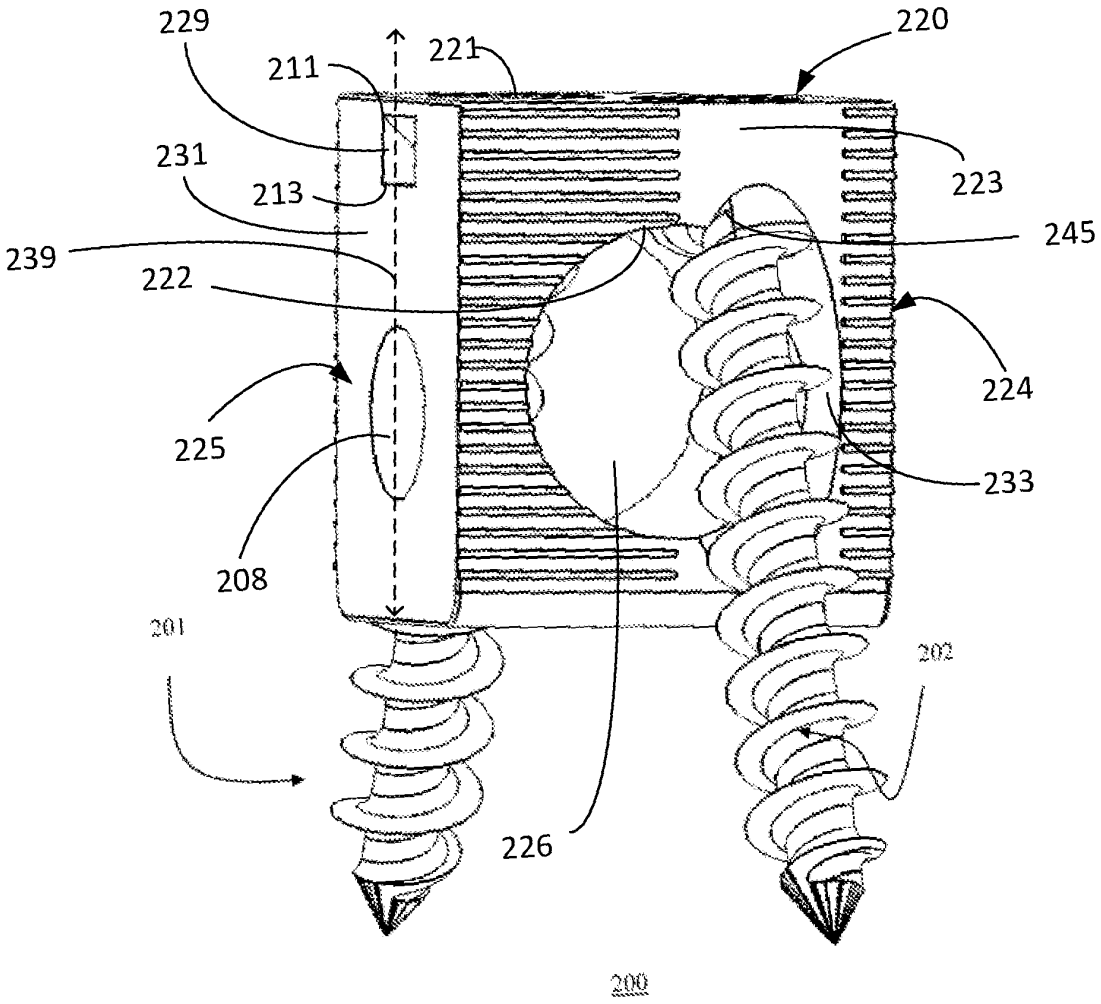

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Fig. 2B

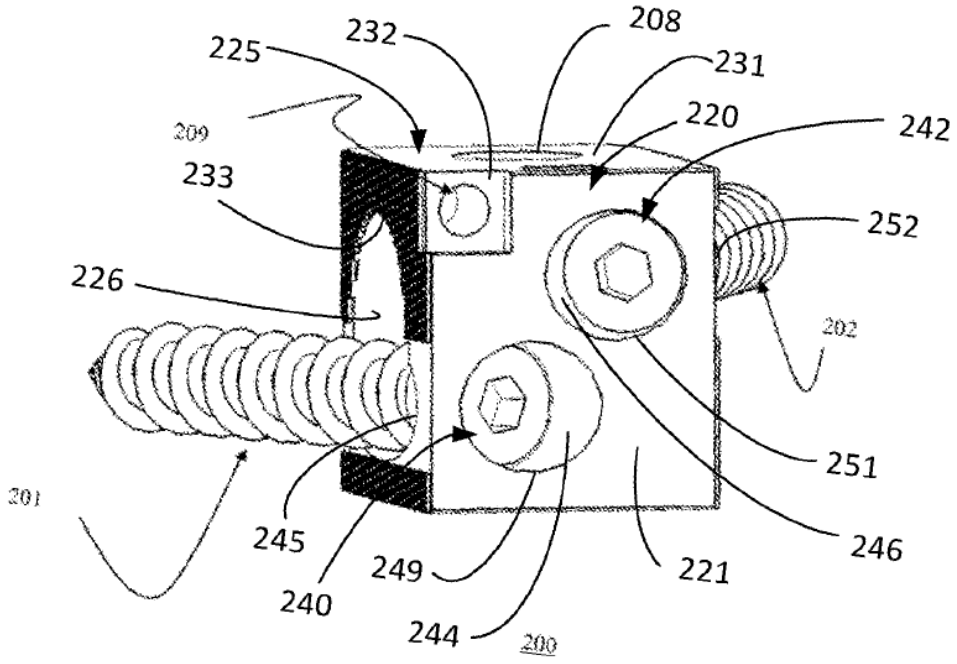

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Fig. 2C

Amendments to the Specification:

Please amend the title as follows:

INTERVERTEBRAL IMPLANT AND TOOL ASSEMBLY ~~BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION~~

Please replace paragraph [0064.1], introduced in the Office Action response of December 9, 2022, after paragraph [0064] on page 17 of the specification with the below amended paragraph:

[0064.1] Figures 2A-2C illustrate that the lumbar intervertebral non-expandable screw box 200 includes a top wall 220, top surface 221 of the top wall [[221]], bottom surface 222 of the top wall [[222]], side surface 223 of the top wall [[223]], first sidewall 224, second sidewall 225, open space 226, first internal screw hole ~~guide~~ 240, ~~first internal bore 248,~~ first widened portion ~~recess~~ 244 of the first internal screw hole 240 for receiving a head of screw 202, first entry opening 249, first exit opening 245, first indentation 228 in a first outer side surface 230, second indentation 229 in a second outer side surface 231, second internal screw hole ~~guide~~ 242, ~~second internal bore 250,~~ second entry opening 251, second exit opening 252, second widened portion ~~recess~~ 246 of the second internal screw hole 242 for receiving a head of screw 201, threaded hole 209 (also referred to as screw insert and circular opening herein), rectangular indentation 232, first centerline axis 238, and second centerline axis 239. The first internal screw hole 240 further includes a first narrowed portion (not shown) extending from the first widened portion 244 to the first exit opening 245 and receiving a body of screw 202, and the second internal screw guide 242 also includes a second narrowed portion (also not shown) extending from the second widened portion 246 to the second exit opening 245 and receiving a body of screw 201. The lumbar intervertebral non-expandable screw box 200 also includes an aperture 208 (also referred to as holes or circular side hole herein) and an inner side surface 233 of the

sidewall [[233]]. The aperture 208 includes a top boundary 211 and a bottom boundary 213.

Amendments to Claims:

Listing of Claims.

1-20. (Cancelled)

21. (Currently Amended) An intervertebral implant comprising:

a top wall including a top surface and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure and define an open space capable of receiving bone filling for biological bone fusion; and

an internal screw hole defined by the intervertebral implant and extending from ~~guide having an internal bore and a recess extending into the top surface of the top wall, the internal bore having~~ an entry opening formed in the top wall to ~~and~~ an exit opening~~, the entry opening of the internal bore formed at a juncture between the internal bore and the recess, the entry opening of the internal bore formed only in the top surface of the top wall, the recess sized and shaped to accommodate a screw head of a screw, and the exit opening~~ formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall, the internal screw hole having a widened portion and a narrowed portion, the widened portion extending into the top wall from the entry opening and configured to recess a screw head below the top surface of the top wall, the narrowed portion coupled to the widened portion and configured to receive a screw body;

wherein the intervertebral implant does not include a faceplate to retain the screw in the internal screw hole ~~guide~~.

22. (Currently Amended) The intervertebral implant of claim 21, wherein the ~~internal bore is coaxial with the recess~~ widened portion extends into the top wall so as to recess all portions of the screw head below the top surface of the top wall.

23. (Currently Amended) The intervertebral implant of claim 22, wherein the exit opening of the internal screw hole is configured such that the screw body extending through the internal screw hole exits at the exit opening ~~guide extends through an entire depth of the top wall from the top surface to the bottom surface and exiting~~ at least partially into the open space.

24. (Previously Presented) The intervertebral implant of claim 23, wherein the intervertebral implant is configured to be inserted into a disc space between a first vertebral body and a second vertebral body and to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion.

25. (Previously Presented) The intervertebral implant of claim 24, wherein each of the first sidewall and the second sidewall has a surface positioned opposite to a first surface of the first vertebral body and a second surface of the second vertebral body when the intervertebral implant is inserted into the disc space.

26. (Previously Presented) The intervertebral implant of claim 25, wherein the surfaces of the first sidewall and the second sidewall include surface features, and wherein the surface features include a plurality of ridges.

27. (Cancelled).

28. (Previously Presented) The intervertebral implant of claim 21, wherein the side surface of the top wall is patterned with a plurality of surface features to create a rough side surface.

29. (Cancelled).

30. (Currently Amended) The intervertebral implant of claim 21, wherein the internal screw hole ~~guide~~ is a first internal screw hole ~~guide~~, and the intervertebral implant further comprises:

at least a second internal screw hole extending from ~~guide having a second internal bore with~~ a second entry opening formed in the top wall to ~~and~~ a second exit opening, the second screw hole comprising a second widened portion ~~entry opening formed within a second recess formed in the top wall and~~ extending into the ~~top surface of the~~ top wall from the second entry opening, the second internal screw hole ~~and~~ oriented in a different direction than the first internal screw hole ~~bore of the first internal screw guide~~.

31. (Cancelled).

32. (Previously Presented) The intervertebral implant of claim 21, further comprising:

a first indentation on a first outer side surface of the first sidewall;

a second indentation on a second outer side surface of the second sidewall, wherein the second indentation is positioned opposite of the first indentation;

a first circular side hole extending into the first outer side surface of the first sidewall;

a second circular side hole extending into the second outer side surface of the second sidewall, wherein the second circular side hole is positioned opposite of the first circular side hole,

wherein the first indentation and the first circular side hole are both positioned along a first centerline axis that bisects the first sidewall, and

wherein the second indentation and the second circular side hole are both positioned along a second centerline axis that bisects the second sidewall.

33. (Currently Amended) An implant system comprising:

an intervertebral implant comprising:

a top wall including a top surface and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure and define an open space capable of receiving bone filling for biological bone fusion, and wherein the first sidewall and the second sidewall each defines an aperture through an outer side surface to an opposite inner side surface, the aperture connected to the open space and configured to promote biological bone fusion through the first sidewall and the second sidewall; and

an internal screw hole defined by the intervertebral implant and extending from ~~guide having an internal bore and a recess extending into the top surface of the top wall, the internal bore having~~ an entry opening formed in the top wall to ~~and~~ an exit opening~~, the entry opening of the internal bore formed adjacent to the recess, the recess sized and shaped to accommodate a screw head, and the exit opening~~ formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall, the internal screw hole having a widened portion and a narrowed portion, the widened portion extending into the top wall from the entry opening and configured to recess a screw head below the top surface of the top wall, the narrowed portion coupled to the widened portion and configured to receive a screw body;

the intervertebral implant including a first indentation on a first surface of the intervertebral implant and a second indentation on a second surface of the intervertebral implant, the first indentation formed on the first surface and bounded by a top boundary and a bottom boundary, the bottom boundary of the first indentation positioned closer to a juncture of the first surface with the top wall than to a juncture of the first surface with the bottom wall; and

a tool comprising:

an elongate shaft having a first end and a second end; and

a gripper at the first end of the elongate shaft, the gripper comprising a first prong and a second prong,

wherein the first prong and the second prong are capable of respectively engaging the first indentation and the second indentation of the intervertebral implant.

34. (Currently Amended) The implant system of claim 33, wherein the internal screw hole ~~guide~~ is a first internal screw hole ~~guide having a first internal bore~~, and the intervertebral implant further comprises a second internal screw hole ~~guide having a second internal bore~~ configured to orient a screw in a different direction than the first internal screw hole ~~bore~~, the implant system ~~assembly~~ further comprising:

a first screw disposed in the first internal screw hole ~~guide~~ and at least partially within the intervertebral implant; and

a second screw disposed in the second internal screw hole ~~guide~~ and at least partially within the intervertebral implant; wherein each of the first internal screw hole ~~guide~~ and second internal screw hole ~~guide~~ is angled to bi-directionally orient the first screw and the second screw in opposite directions.

35. (Cancelled)

36. (Currently Amended) The implant system of claim 34, wherein the first internal screw hole ~~guide~~ has a first angle with respect to the top wall of the intervertebral implant and the second internal screw guide has a second angle with respect to the top wall of the intervertebral implant, and wherein the first angle and the second angle extend through opposite sides of the intervertebral implant.

37-40. (Cancelled).

41. (Previously Presented) The intervertebral implant of claim 21, wherein the side surface of the top wall and a side surface of the bottom wall are each patterned with a plurality of surface features to create a rough side surface of the intervertebral cage.

42. (Previously Presented) The intervertebral implant of claim 41, wherein at least some of the plurality of surface features are positioned on the side surface of the top wall closer to the top surface of the top wall than the exit opening.

43. (Previously Presented) The intervertebral implant of claim 42, wherein the plurality of surface features are ridges extending from the side surface of the top wall and the side surface of the bottom wall, the ridges positioned around the open space capable of receiving bone filling for biological bone fusion.

44. (Cancelled).

45. (Currently Amended) An intervertebral implant system comprising:

a top wall including a top surface and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure and define an open space capable of receiving bone filling for biological bone fusion;

a substantially circular opening extending substantially normally into the top surface of the top wall; and

an internal screw hole extending from ~~guide having an internal bore and a recess extending into the top surface of the top wall, the internal bore having~~ an entry opening formed in the top wall to ~~and~~ an exit opening~~, the entry opening of the internal bore formed at a juncture between the internal bore and the recess, the entry opening of the internal bore formed only in the top surface of the top wall, the recess sized and shaped to accommodate a screw head, and the exit opening~~ formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall, the internal screw hole having a widened portion and a narrowed portion, the widened portion extending into the top wall from the entry opening and configured to recess a screw head

below the top surface of the top wall, the narrowed portion coupled to the widened portion and configured to receive a screw body.

46. (Previously Presented) The intervertebral implant system of claim 45, further comprising a substantially rectangular indentation extending into at least part of the top wall, the substantially rectangular indentation oriented substantially normally into the top surface of the top wall.

47. (Previously Presented) The intervertebral implant system of claim 46, wherein the substantially circular opening is formed in the substantially rectangular opening.

48. (Previously Presented) The intervertebral implant system of claim 45, wherein the intervertebral implant system does not include a faceplate to retain the screw head in the internal screw guide.

49. (Previously Presented) The intervertebral implant system of claim 45, wherein the top surface of the top wall meets the outer side surfaces of the first and second sidewalls at a corner that is substantially perpendicular.

50. (New) The intervertebral implant of claim 21, wherein the entry opening comprising a beginning of the widened portion is formed only in the top surface of the top wall.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

26191 7590 03/22/2023

FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
HAMMOND, ELLEN CHRISTINA	

ART UNIT	PAPER NUMBER
3773	

NOTIFICATION DATE	DELIVERY MODE
03/22/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Applicant-Initiated Interview Summary	Application No. 17/706,873	Applicant(s) Moskowitz et al.		
	Examiner ELLEN C HAMMOND	Art Unit 3773	AIA (First Inventor to File) Status No	Page 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	Title	Type
ELLEN C HAMMOND	Primary Examiner	Telephonic
Kiersten Batzli	Attorney of Record	

Date of Interview: 17 March 2023

Issues Discussed:

35 U.S.C. 112

Applicant submitted proposed amendments to address the 112 rejection discussed during the last interview. The amendments include the recitation of a widened and narrowed portion of the internal screw hole. The examiner failed to find support in the specification or drawings for the newly claimed widened and narrowed portion. Please direct attention to that support in the formal amendment.

/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/14/2022	12/23/2022	03/31/2023						
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	30	✓	✓	✓						
	31	N	-	-						
	32	✓	✓	✓						
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	35	✓	-	-						
	36	✓	✓	✓						
	37	-	-	-						
	38	-	-	-						
	39	-	-	-						
	40	-	-	-						
	41	✓	✓	✓						
	42	✓	✓	✓						

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	**Art Unit**
	ELLEN C HAMMOND	3773

CLAIM		DATE								
Final	Original	09/14/2022	12/23/2022	03/31/2023						
	43	✓	✓	✓						
	44	✓	-	-						
	45		✓	✓						
	46		✓	✓						
	47		✓	✓						
	48		✓	✓						
	49		✓	✓						
	50			✓						

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

CPC - Searched*		
Symbol	**Date**	**Examiner**
A61F2/447 and 4455	09/14/2022	ECH
A61F2002/448	09/14/2022	ECH
Above - UPDATED	12/23/2022	ECH
Above - UPDATED	03/31/2023	ECH

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	**Date**	**Examiner**
IPR2020-01307 Reviewed Inter Partes Review of U.S. Patent No. 8,353,913	09/14/2022	ECH
IPR2020-01308 Reviewed Inter Partes Review of U.S. Patent No. 9,889,022	09/14/2022	ECH
Performed an inventor and assignee search. Reviewed Dossier references. Reviewed cited references in family. Performed a text search in ip.com.	09/14/2022	ECH

/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L98	464	a61f2/447,4455.cpc. AND @pd>="20221223"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/31 02:00 PM
L99	21	a61f2002/448.cpc. AND @pd>="20221223"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/03/31 02:00 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

DO NOT ENTER: /E.C.H/

DO NOT ENTER: /E.C.H/

Amendments to the Specification:

Please amend the title as follows:

INTERVERTEBRAL IMPLANT AND TOOL ASSEMBLY ~~BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION~~

Please replace paragraph [0064.1], introduced in the Office Action response of December 9, 2022, after paragraph [0064] on page 17 of the specification with the below amended paragraph:

[0064.1] Figures 2A-2C illustrate that the lumbar intervertebral non-expandable screw box 200 includes a top wall 220, top surface 221 of the top wall [[221]], bottom surface 222 of the top wall [[222]], side surface 223 of the top wall [[223]], first sidewall 224, second sidewall 225, open space 226, first internal screw hole ~~guide~~ 240, ~~first internal bore 248,~~ first widened portion ~~recess~~ 244 of the first internal screw hole 240 for receiving a head of screw 202, first entry opening 249, first exit opening 245, first indentation 228 in a first outer side surface 230, second indentation 229 in a second outer side surface 231, second internal screw hole ~~guide~~ 242, ~~second internal bore 250,~~ second entry opening 251, second exit opening 252, second widened portion ~~recess~~ 246 of the second internal screw hole 242 for receiving a head of screw 201, threaded hole 209 (also referred to as screw insert and circular opening herein), rectangular indentation 232, first centerline axis 238, and second centerline axis 239. The first internal screw hole 240 further includes a first narrowed portion (not shown) extending from the first widened portion 244 to the first exit opening 245 and receiving a body of screw 202, and the second internal screw guide 242 also includes a second narrowed portion (also not shown) extending from the second widened portion 246 to the second exit opening 245 and receiving a body of screw 201. The lumbar intervertebral non-expandable screw box 200 also includes an aperture 208 (also referred to as holes or circular side hole herein) and an inner side surface 233 of the

sidewall [[233]]. The aperture 208 includes a top boundary 211 and a bottom boundary 213.

DO NOT ENTER: /E.C.H/

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

26191 7590 04/05/2023

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PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
HAMMOND, ELLEN CHRISTINA	

ART UNIT	PAPER NUMBER
3773	

NOTIFICATION DATE	DELIVERY MODE
04/05/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No. 17/706,873	Applicant(s) Moskowitz et al.	
	Examiner ELLEN C HAMMOND	Art Unit 3773	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 03/21/2023.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 21-26,28,30,32-34,36,41-43 and 45-50 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 21-26,28,30,32-34,36,41-43 and 45-50 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☑ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 03/21/2023 is/are: a)☐ accepted or b)☑ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application is being examined under the pre-AIA first to invent provisions.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/21/2023 has been entered.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the widened portion and narrowed portion of the internal screw hole must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing

sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to because it appears that the body and head of screws 201 and 202 have the same diameter. It is therefore unclear how the screw could fit through the newly claimed and described narrowed portion of the internal screw holes because the internal screw hole entry opening and widened portion both appear to be the same size which is just slightly larger than the screw received therein.

Additionally, Figs. 2A and 2B both illustrate the same side of the implant and therefore should both be given the same name, i.e., the first sidewall (element 224). The examiner understands that the implant has two separate sidewalls but it is noted that only a single sidewall is visible from the Drawings.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The substitute specification filed 03/21/2023 has not been entered because it does not conform to 37 CFR 1.125(b) and (c) because it contains new matter. Specifically, the recitation that "the first internal screw hole 240 further includes a first narrowed portion (not shown) extending from the first widened portion 244 to the first exit opening 245 and receiving a body of screw 202, and the second internal screw guide 242 also includes a second narrowed portion (also not shown) extending from the second widened portion 246 to the second exit opening 245 and receiving a body of screw 201" constitutes new matter. Additionally, it appears that the first entry opening and the first widened portion have the same diameter which also appears to be just slightly larger than the diameter of the screw. The screw head appears to fit just inside the entry opening. The screw head and screw body also appear to have the same diameter. Accordingly, it is unclear how the screw body could pass through a narrowed portion of the internal screw hole because the screw body would have a larger diameter than a narrowed portion of the internal screw hole.

Additionally, Figs. 2A and 2B both illustrate the same side of the implant and therefore should both be given the same name, i.e., the first sidewall. The examiner understands that the implant has two separate sidewalls but it is noted that only a single sidewall is visible from the Drawings and therefore the inclusion of the reference numerals and description included in the amended specification should be corrected.

In par. 0064.1, line 9, "201" should be referenced as 202.

In par. 0064, line 18, "208" should be referenced as 228.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112(a):

> (a) IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

The following is a quotation of the first paragraph of pre-AIA 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 21-26, 28, 30, 32-34, 36, 41-43 and 45-50 are rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor or a joint inventor, or for applications subject to pre-AIA 35 U.S.C. 112, the inventor(s), at the time the application was filed, had possession of the claimed invention. Independent claims 21, 33 and 45 were amended to recite that the internal screw hole has a widened portion and a narrowed portion…the narrowed portion configured to receive a screw body. It is first noted that the drawings and specification fail to described or illustrate the newly claimed narrowed and widened portion. Additionally, looking at Fig. 2C it appears that the entry opening and the “widened portion” of the internal screw hole have the same diameter which also appears to be just slightly larger than the diameter of the screw head received therein. The screw head appears to have the same diameter as the body of the screw. It is unclear how the body of the screw could pass through any narrowed region of the screw hole because the screw body diameter appears to be the same size as the screw head. The narrowed region would be too small for passage of the screw body.

Claim Rejections - 35 USC § 102

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim(s) 21-26, 28, 30 and 41-43 is/are rejected under pre-AIA 35 U.S.C. 102(e) as being anticipated by Waugh et al. (U.S. 8,268,000 B2).

Concerning claim 21, Waugh et al. disclose an intervertebral implant comprising: a top wall (see Fig. 3 below) including a top surface (see Fig. 3 below) and a bottom surface (see Fig. 3 below) opposite the top surface; a bottom wall (see Fig. 3 below) opposite the top wall; a first sidewall (see Fig. 3 below); a second sidewall (see Fig. 3 below) opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure and define an open space (see Fig. 3 below) capable of receiving bone filling for biological bone fusion; and an internal screw hole (see Fig. 3 below) defined by the intervertebral implant and extending from an entry opening (see Fig. 3 below) formed in the top wall to an exit opening (see Fig. 3 below) formed at least partially in the bottom surface of the top wall and at least partially in a side surface (see Fig. 3 below) of the top wall, the internal screw hole having a widened portion (see Fig. 3 below) and a narrowed portion (see Fig. 3 below), the widened

portion extending into the top wall from the entry opening and configured to recess a screw head below the top surface of the top wall, the narrowed portion coupled to the widened portion and configured to received a screw body; wherein the intervertebral implant does not include a faceplate to retain the screw in the internal screw hole.

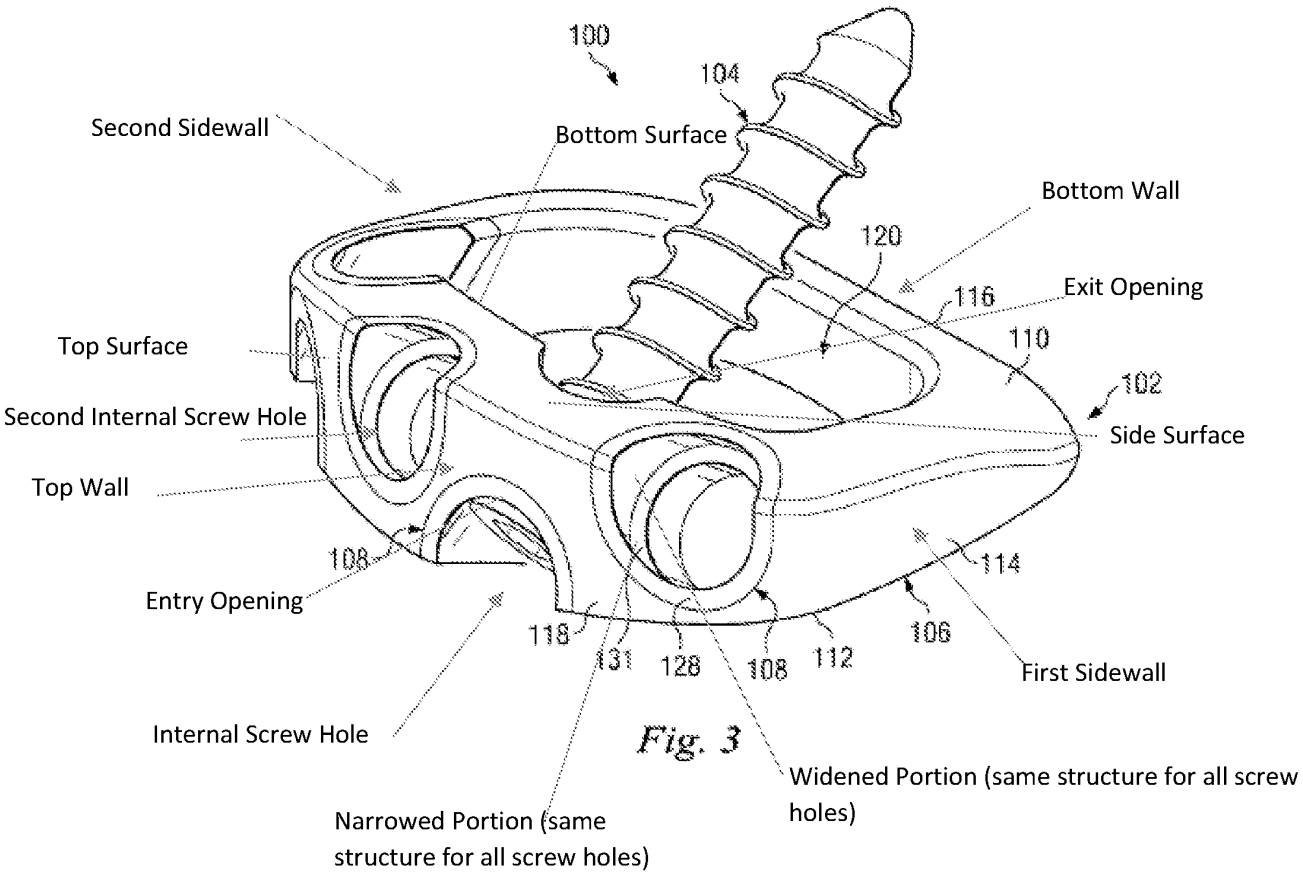


Fig. 3

Concerning claim 22, wherein the widened portion extends into the top wall so as to recess all portions of the screw head below the top surface of the top wall (see Fig. 3 above).

Concerning claim 23, wherein the exit opening of the internal screw hole is configured such that the screw body extending through the internal screw hole exits at the exit opening at least partially into the open space (see Fig. 3 above).

Concerning claim 24, wherein the intervertebral implant is configured to be inserted into a disc space between a first vertebral body and a second vertebral body and to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion (see col. 9).

Concerning claim 25, wherein each of the first sidewall and the second sidewall has a surface positioned opposite to a first surface configured to contact one of the first vertebral body and a second surface of the second vertebral body when the intervertebral implant is inserted into the disc space (see Fig. 12).

Concerning claim 26, wherein the surfaces of the first sidewall and the second sidewall include surface features (see col. 4, lines 25-31), and wherein the surface features include a plurality of ridges (see Fig. 6, element 219) for contacting the first vertebral body and a second vertebral body.

Concerning claim 28, wherein the side surface of the top wall is patterned with a plurality of surface features (see col. 4, lines 25-31) to create a rough side surface.

Concerning claim 30, wherein the internal screw hole is a first internal screw hole, and the intervertebral implant further comprises: at least a second internal screw hole (see Fig. 3 above) extending from a second entry opening formed in the top wall to a second exit opening, the second screw hole comprising a second widened portion extending into the top wall from the second entry opening, the second internal screw hole oriented in a different direction than the first internal screw hole (see Fig. 3 above).

Concerning claim 41, wherein the side surface of the top wall and a side surface of the bottom wall are each patterned with a plurality of surface features (see Fig. 12, element 416 and see col. 4, lines 25-31) to create a rough side surface of the intervertebral cage.

Concerning claim 42, wherein at least some of the plurality of surface features (see Fig. 8 and col. 4, lines 25-31) are positioned on the side surface of the top wall closer to the top surface of the top wall than the exit opening.

Concerning claim 43, wherein the plurality of surface features are ridges (see Fig. 8 and col. 4, lines 25-31) extending from the side surface of the top wall and the side surface of the bottom wall, the ridges positioned around the open space capable of receiving bone filling for biological bone fusion.

Claim Rejections - 35 USC § 103

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries for establishing a background for determining obviousness under pre-AIA 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 32 is/are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Waugh et al. (U.S. 8,268,000 B2) as applied to claim 21 above.

Waugh discloses the invention substantially as described above. However, Waugh does not explicitly disclose tool engaging recesses or circular side holes on the embodiment disclosed in Fig. 3.

In the embodiment of Fig. 12, Waugh specifically discloses a first indentation (see Fig. 13 below) on a first outer side surface of the first sidewall; a second indentation on a second outer side surface of the second sidewall, wherein the second indentation is positioned opposite of the first stet indentation; a first circular side hole (see Fig. 12 above) extending into the first outer side surface of the first sidewall; a second circular side hole extending into the second outer side surface of the second sidewall, wherein the second circular side hole is positioned opposite of the first circular side hole, wherein the first indentation and the first circular side hole are both positioned along a first centerline axis (see Fig. 12 above) that bisects the first sidewall, and wherein the second indentation and the second circular side hole are both positioned along a second centerline axis that bisects the second sidewall. The indentation provides a gripping region for an inserter instrument and the hole permits bone ingrowth after implantation.

It would have been obvious to one having ordinary skill in the art at the time the invention as made to modify the embodiment illustrated in Fig. 3 to include the instrument gripping region and side holes for bone ingrowth in order to provide insertion ease and better fusion of the implant to adjacent bone.

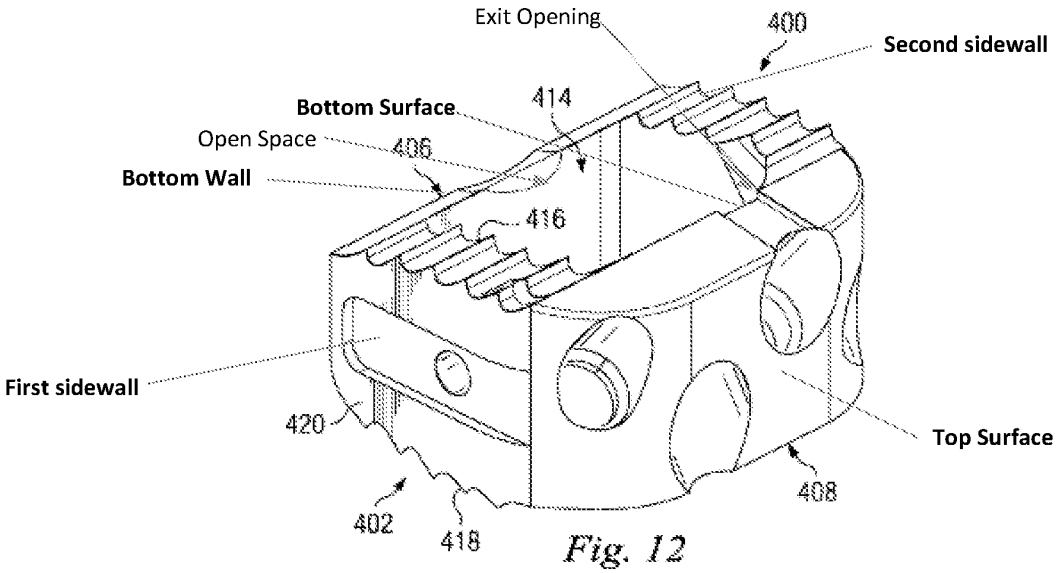

Exit Opening
400
Second sidewall
414
Bottom Surface
Open Space
406
Bottom Wall
416
First sidewall
420
Top Surface
408
402
418

Fig. 12

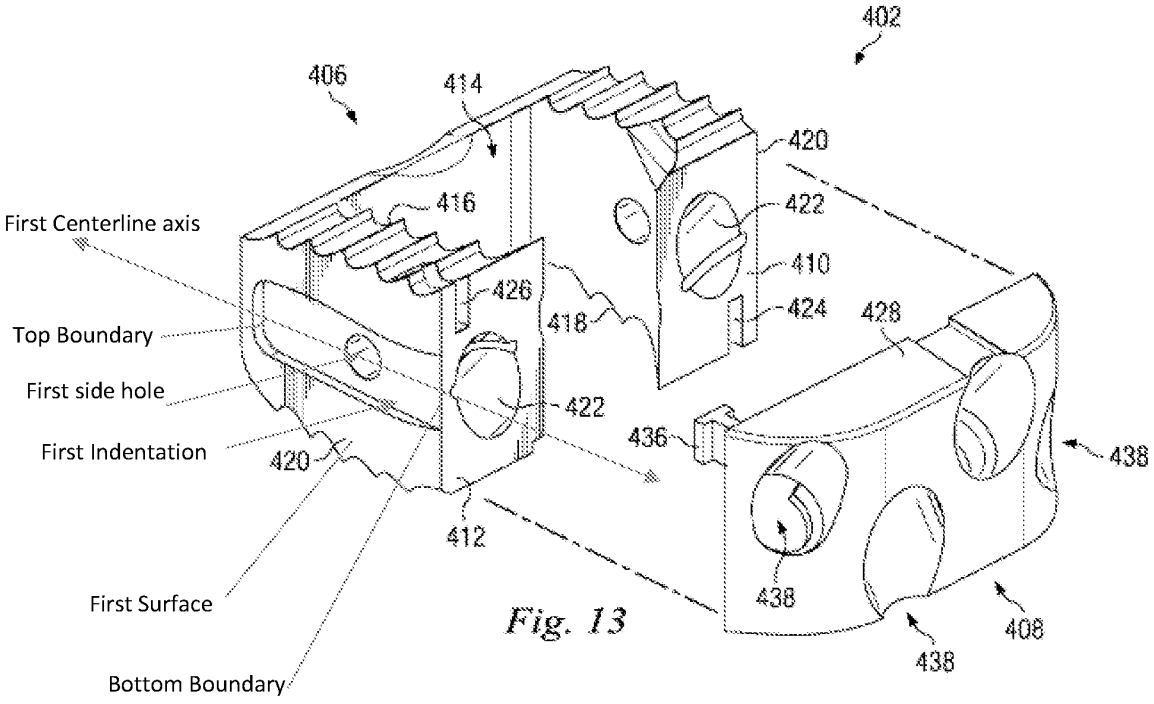

402
406
414
420
416
422
First Centerline axis
410
426
418
424
428
Top Boundary
First side hole
422
436
438
First Indentation
420
412
438
First Surface
408
438
Bottom Boundary

Fig. 13

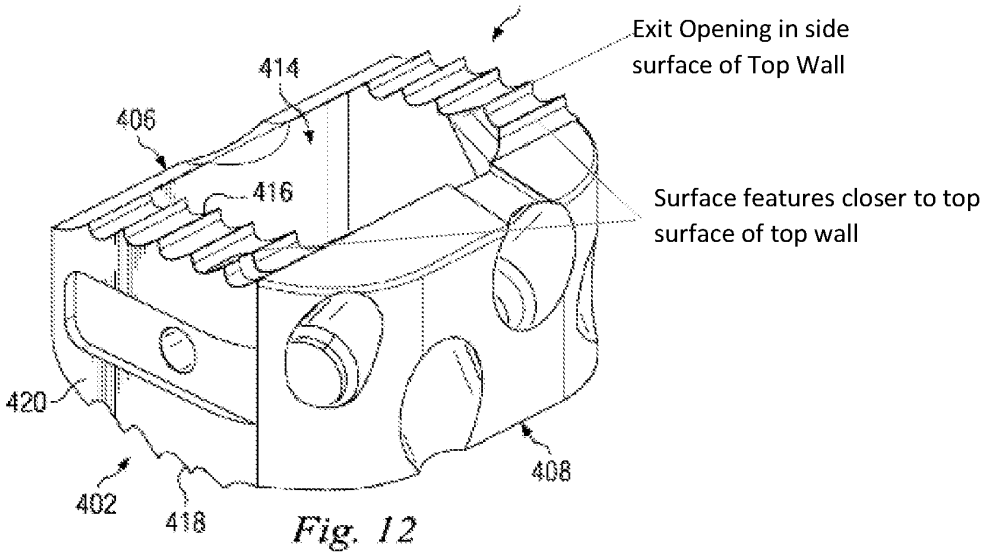


Fig. 12

Claims 33, 34 and 36 is/are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Waugh et al. (U.S. 8,268,000 B2) in view of Waugh et al. (U.S. 2008/0249569 A1).

Concerning claim 33, Waugh et al. disclose an implant system comprising: a top wall (see Fig. 3 above) including a top surface (see Fig. 3 above) and a bottom surface (see Fig. 3 above) opposite the top surface; a bottom wall (see Fig. 3 above) opposite the top wall; a first sidewall (see Fig. 3 above); a second sidewall (see Fig. 3 above) opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure and define an open space capable of receiving bone filling for biological bone fusion; and an internal screw hole (see Fig. 3) defined by the intervertebral implant and extending from an entry opening (see Fig. 3) formed in the top wall to an exit opening (see Fig. 3) formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall, the internal screw hole having a widened portion (see Fig. 3) and a narrowed portion (see Fig. 3), the widened portion extending into the top wall from the entry opening and configured to recess a screw head below the top surface of the top wall, the narrowed portion coupled to the widened portion and configured to receive a screw body.

However, the embodiment illustrated in Fig. 3 by Waugh does not explicitly disclose tool engaging recesses or circular side holes.

In the embodiment of Fig. 12, Waugh specifically discloses a first indentation (see Fig. 13 above) on a first outer side surface of the first sidewall; a second indentation on a second outer side surface of the second sidewall, wherein the second indentation is positioned opposite of the first indentation; the first indentation bounded by a top boundary and a bottom boundary, the bottom boundary of the first indentation positioned closer to a juncture of the first surface with the top wall than to a juncture of the first surface with the bottom wall, and wherein the first sidewall and the second sidewall each defines an aperture (see Fig. 13 above) through an outer side surface to an opposite inner side surface, the aperture connected to the open space and configured to promote biological bone fusion through the first sidewall and the second sidewall. The indentation provides a gripping region for an inserter instrument and the hole permits bone ingrowth after implantation.

It would have been obvious to one having ordinary skill in the art at the time the invention as made to modify the embodiment illustrated in Fig. 3 to include the instrument gripping region and hole for bone ingrowth in order to provide insertion ease and better fusion of the implant to adjacent bone.

Additionally, Waugh et al. do not explicitly disclose a tool comprising: an elongate shaft having a first end and a second end; and a gripper at the first end of the elongate shaft, the gripper comprising a first prong and a second prong, wherein the first prong and the second prong are capable of respectively engaging the first indentation and the second indentation of the intervertebral implant.

Waugh et al. disclose an implant system comprising a tool (see Fig. 6 and par. 0038) comprising: an elongate shaft having a first end and a second end; and a gripper at the first end of the elongate shaft, the gripper comprising a first prong and a second prong, wherein the first prong and the second prong are capable of respectively engaging a first indentation and a second indentation of an intervertebral implant in the same field of endeavor for the purpose of inserting the implant.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Waugh's system include an implantation tool, as taught by Waugh et al., for implanting the spinal implant. The use of implantation tools having prongs received within slots located on the sides of fusion implants is well known in the art as also evidenced by Biedermann et al. (U.S. 2009/0030520 A1, element 14).

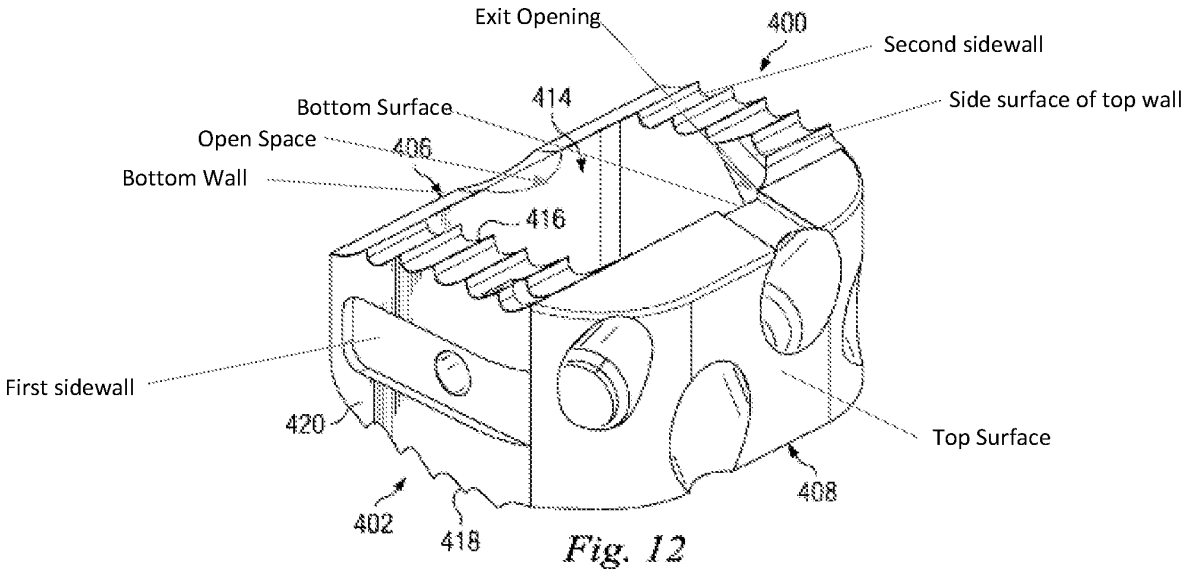

Exit Opening
400
Second sidewall
414
Bottom Surface
Side surface of top wall
Open Space
406
Bottom Wall
416
First sidewall
420
Top Surface
408
402
418

Fig. 12

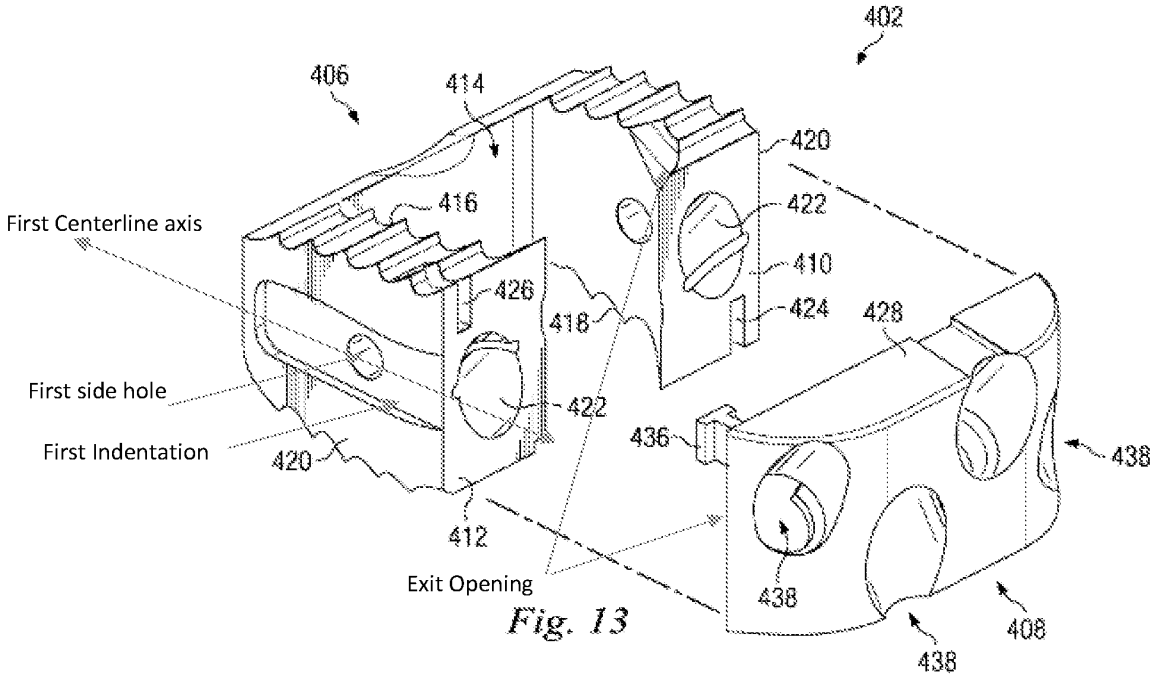

402
406
414
420
First Centerline axis
416
422
410
426
418
424
428
First side hole
422
436
438
First Indentation
420
412
Exit Opening
438
408
438

Fig. 13

Concerning claim 34, wherein the internal screw hole is a first internal screw hole, and the intervertebral implant further comprises a second internal screw hole configured to orient a screw in a different direction than the first internal screw hole, the implant system further comprising: a first screw disposed in the first internal screw hole and at least partially within the intervertebral implant; and a second screw disposed in the second internal screw hole and at least partially within the intervertebral implant; wherein each of the first internal screw hole and second internal screw hole is angled to bi-directionally orient the first screw and the second screw in opposite directions (see col. 9, lines 28-33).

Concerning claim 36, wherein the first internal screw guide has a first angle with respect to the top wall of the intervertebral implant and the second internal screw guide has a second angle with respect to the top wall of the intervertebral implant, and wherein the first angle and the second angle extend through opposite sides of the intervertebral implant (see col. 9, lines 28-33).

Claims 45-49 is/are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Waugh et al. (U.S. 8,268,000 B2) in view of Ferree (U.S. 2004/0122424 A1).

Concerning claim 45-47, Waugh et al. disclose an intervertebral implant system comprising: a top wall (see Fig. 3 above) including a top surface (see Fig. 3 above) and a bottom surface (see Fig. 3 above) opposite the top surface; a bottom wall (see Fig. 3 above) opposite the top wall; a first sidewall (see Fig. 3 above); a second sidewall (see Fig. 3 above) opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure and define an open space (see Fig. 3 above) capable of receiving bone filling for biological bone fusion; and an internal screw hole (see Fig. 3 above) extending from an entry opening (see Fig. 3 above) formed in the top wall to an exit opening (see Fig. 3 above) formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall (see Fig. 3 above), the internal screw hole having a widened portion and a narrowed portion, the widened portion extending into the top wall from the entry

opening and configured to recess a screw head below the top surface of the top wall, the narrowed portion coupled to the widened portion and configured to receive a screw body (see Fig. 3 above).

However, Waugh et al. do not explicitly disclose a substantially circular opening formed in a substantially rectangular opening extending substantially normally into the top surface of the top wall.

Ferree teach an intervertebral implant system comprising a substantially circular opening (see Fig. 2A, receiving element 222) formed in a substantially rectangular opening extending substantially normally into the top surface of the top wall in the same field of endeavor for the purpose of connecting two fusion bodies together.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Waugh's system to include a substantially circular opening formed in a substantially rectangular opening extending substantially normally into the top surface of the top wall, as taught by Ferree, in order to provide an engagement point for a connection bar to hold two implants together. It is well known in the art that minimally invasive surgery provides many benefits to the patient and reduces trauma. Waugh's implants could be reduced to less than half the size making it possible to use a reduced incision size and minimally invasive techniques. Two of Waugh's reduced sized implant could then be connected, as taught by Ferree to fill the intervertebral space. It may also be necessary to leave a middle portion of the adjacent vertebrae untouched due to anatomy or previous injury thereby requiring two smaller size implants connected to each other. Additionally, a change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955). Finally, it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. Nerwin v. Erlichman, 168 USPQ 177, 179.

Concerning claim 48, wherein the intervertebral implant system does not include a faceplate to retain the screw head in the internal screw guide (see Fig. 12).

Concerning claim 49, wherein the top surface of the top wall meets the outer side surfaces of the first and second sidewalls at a corner that is substantially perpendicular (see Fig. 12).

Response to Arguments

Applicant's arguments filed 03/21/2023 have been fully considered but they are not persuasive. In response to Applicant's argument that "Waugh '000 fails to teach or suggest a unitary structure," it is noted that Fig. 3 illustrates a unitary structure 100.

Regarding Applicant's argument that "the elongated slot of Waugh '000 fails to disclose a first indentation bounded by a top boundary and a bottom boundary, the bottom boundary of the first indentation positioned closer to a juncture of the first surface with the top wall than to a juncture of the first surface with the bottom wall," it is noted that Waugh's slot includes boundaries as claimed. See Fig. 12 below.

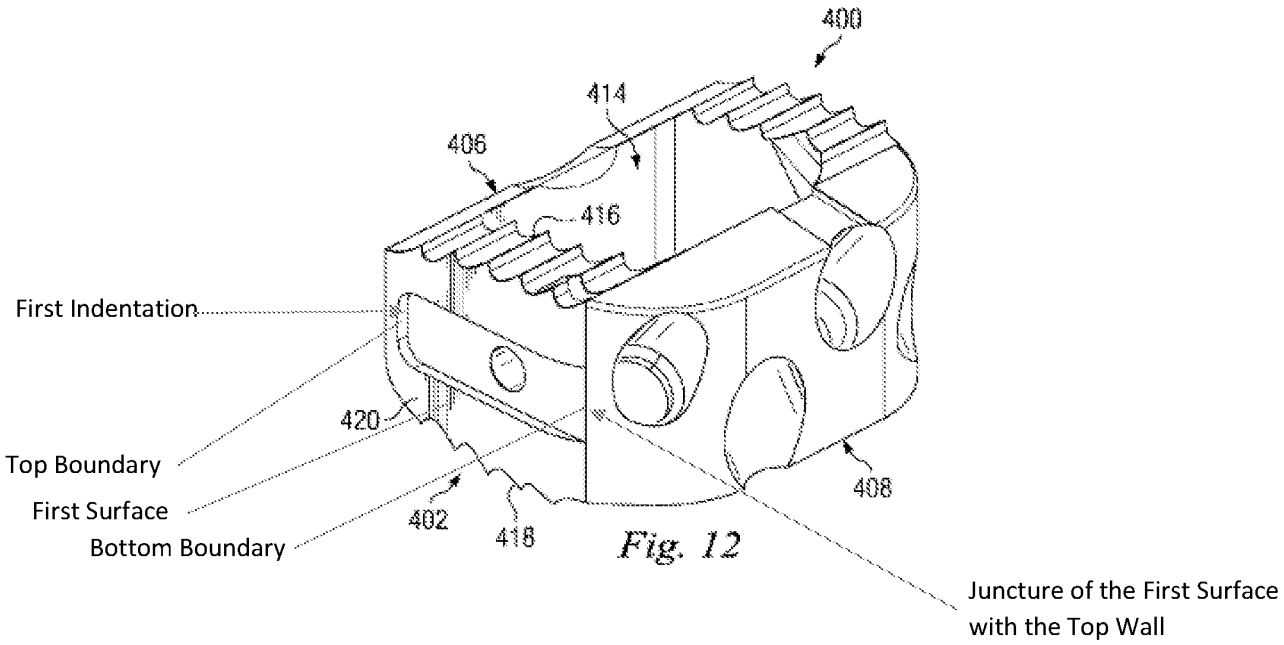

400
414
406
416
First Indentation
420
Top Boundary
First Surface
Bottom Boundary
402
418
408
Juncture of the First Surface with the Top Wall

Fig. 12

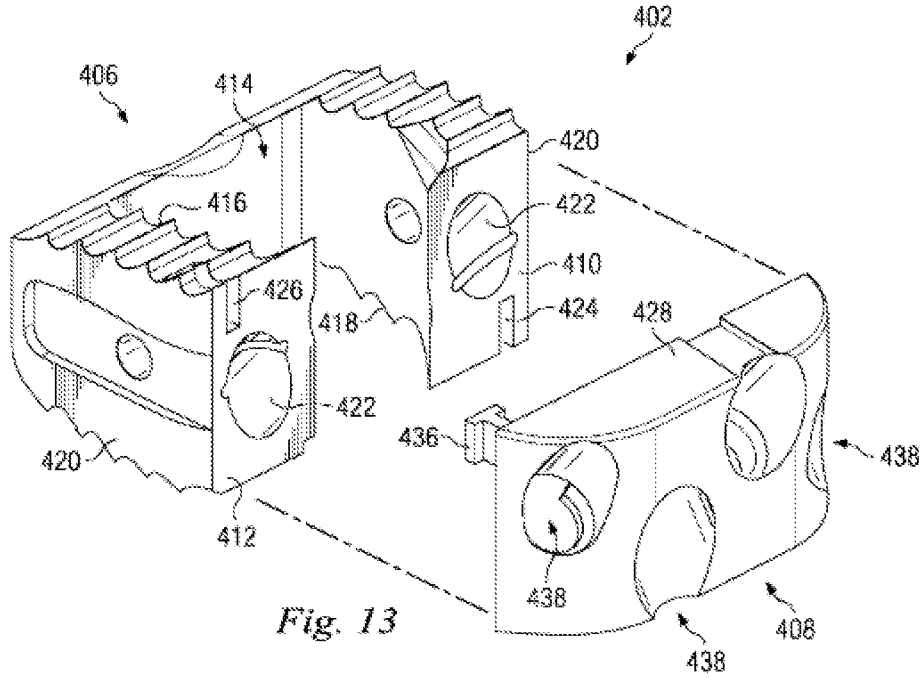

402
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412
438
408
438

Fig. 13

Regarding applicant's argument that the combination of Waugh and Ferree is fatally flawed. It is noted that the idea of reducing the size of implants, and forming an integral piece into separate components is a well-known technique to permit minimally invasive surgery. One would find it obvious to reduce the size of Waugh's implant to be two identical and separate components connected by a bar, the concept of which is taught by Ferree, in order to provide a fusion implant that fills the vertebral space but can be implanted as small components that are assembled in situ.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELLEN HAMMOND whose telephone number is (571)270-3819. The examiner can normally be reached Monday-Friday 8 - 4 PM .

If attempts to reach the examiner by telephone are unsuccessful, ***please contact*** **the examiner's supervisor, Eduardo C. Robert, *at* 571 272-4719**. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ELLEN C HAMMOND/
Primary Examiner, Art Unit 3773

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/706,873	Filing Date 03/29/2022	☐ To be Mailed

ENTITY: ☐ LARGE ☑ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $240 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	06/30/2023	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 21	Minus	** 21	= 0		x $40 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $192 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/DAWN BREWER/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	:	Ahmnon D. Moskowitz	Art Unit	:	3773
Application No.	:	17/706,873	Examiner	:	Ellen Christina Hammond
Filed	:	March 29, 2022	Conf. No.	:	1103
Title	:	INTERVERTEBRAL IMPLANT AND TOOL ASSEMBLY			

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY TO ACTION OF APRIL 5, 2023

Please consider the following reply.

Amendments to the Specification:

Please amend the title as follows:

INTERVERTEBRAL IMPLANT AND TOOL ASSEMBLY ~~BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION~~

Please replace paragraph [0064.1], introduced in the Office Action response of December 9, 2022, after paragraph [0064] on page 17 of the specification with the below amended paragraph:

[0064.1] Figures 2A-2C illustrate that the lumbar intervertebral non-expandable screw box 200 includes a top wall 220, top surface 221 of the top wall 220 [[221]], bottom surface 222 of the top wall 220 [[222]], side surface 223 of the top wall 220 [[223]], first and second sidewalls 224 ~~sidewall 224, second sidewall 225~~, open space 226, first internal screw hole ~~guide~~ 240, ~~first internal bore 248, first recess 244,~~ first entry opening 249, first exit opening 245, first and second outer indentations ~~indentation~~ 228 formed in [[a]] respective first and second outer side surfaces ~~surface~~ 230, ~~second indentation 229 in a second outer side surface 231,~~ second internal screw hole ~~guide~~ 242, ~~second internal bore 250,~~ second entry opening 251, second exit opening 252, ~~second recess 246,~~ threaded hole 209 (also referred to as screw insert and circular opening herein), and rectangular indentation 232~~, first centerline axis 238, and second centerline axis 239~~. The lumbar intervertebral non-expandable screw box 200 also includes an aperture 208 (also referred to as holes or circular side hole herein) and an inner side surface 233 of the sidewall 224 [[233]]. Each of the first and second outer indentations 228 includes a top boundary 211 and a bottom boundary 213.

Amendments to Claims:
Listing of Claims.

1-20. (Cancelled).

21. (Currently Amended) An intervertebral implant comprising:

a top wall including a top surface, a first side surface perpendicular to the top surface, a second side surface opposite of the first side surface, and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure and define an open space capable of receiving bone filling for biological bone fusion;

a substantially circular opening extending substantially normally into the top surface of the top wall;

an indentation extending into the top surface of the top wall at an intersection between the top surface of the top wall and the first side surface of the top wall, wherein the indentation has first and second straight edges when view from a direction normal to the top surface of the top wall, and wherein the first straight edge of the indentation is perpendicular to the second straight edge of the indentation; and

an internal screw hole defined by the intervertebral implant and extending from an entry opening formed in the top wall to an exit opening formed at least partially in the bottom surface of the top wall and at least partially in a side surface of the top wall~~, the internal screw hole having a widened portion and a narrowed portion, the widened portion extending into the top wall from the entry opening and configured to recess a screw head below the top surface of the top wall, the narrowed portion coupled to the widened portion and configured to receive a screw body~~;

wherein the intervertebral implant does not include a faceplate to retain the screw in the internal screw hole.

22. (Cancelled).

23. (Currently Amended) The intervertebral implant of claim 21 [[22]], wherein the exit opening of the internal screw hole is configured such that the screw body extending through the internal screw hole exits at the exit opening at least partially into the open space.

24. (Previously Presented) The intervertebral implant of claim 23, wherein the intervertebral implant is configured to be inserted into a disc space between a first vertebral body and a second vertebral body and to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion.

25. (Cancelled).

26. (Cancelled).

27. (Cancelled).

28. (Cancelled).

29. (Cancelled).

30. (Currently Amended) The intervertebral implant of claim 21, wherein the internal screw hole is a first internal screw hole, and the intervertebral implant further comprises:

at least a second internal screw hole extending from a second entry opening formed in the top wall to a second exit opening~~, the second screw hole comprising a second widened portion extending into the top wall from the second entry opening~~, the second internal screw hole oriented in a different direction than the first internal screw hole.

31. (Cancelled).

32. (Currently Amended) The intervertebral implant of claim 21, further comprising:

a first outer indentation on a first outer side surface of the first sidewall;

a second outer indentation on a second outer side surface of the second sidewall, wherein the second outer indentation is positioned opposite of the first outer indentation, wherein an entirety of the first outer indentation is positioned closer to the top surface of the top wall than to a bottom of the bottom wall, and an entirety of the second outer indentation is positioned closer to the top surface of the top wall than to the bottom of the bottom wall;

~~a first circular side hole extending into the first outer side surface of the first sidewall;~~

~~a second circular side hole extending into the second outer side surface of the second sidewall, wherein the second circular side hole is positioned opposite of the first circular side hole,~~

~~wherein the first indentation and the first circular side hole are both positioned along a first centerline axis that bisects the first sidewall, and~~

~~wherein the second indentation and the second circular side hole are both positioned along a second centerline axis that bisects the second sidewall~~.

33. (Currently Amended) An implant system comprising:

an intervertebral implant comprising:

a top wall including a top surface and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall having a first outer side surface;

a second sidewall having a second outer side surface positioned opposite the first outer side surface of the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure and define an open space

capable of receiving bone filling for biological bone fusion, and wherein the first sidewall and the second sidewall define apertures from their respective first and second outer side surfaces to respective first and second inner side surfaces, ~~each defines an aperture through an outer side surface to an opposite inner side surface,~~ the apertures ~~aperture~~ connected to the open space and configured to promote biological bone fusion through the first sidewall and the second sidewall; and

[[an]] a first internal screw hole defined by the intervertebral implant and extending from [[an]] a first entry opening formed in the top wall to [[an]] a first exit opening formed at least partially in the bottom surface of the top wall and at least partially in a first side surface of the top wall~~, the internal screw hole having a widened portion and a narrowed portion, the widened portion extending into the top wall from the entry opening and configured to recess a screw head below the top surface of the top wall, the narrowed portion coupled to the widened portion and configured to receive a screw body~~;

a second internal screw hole defined by the intervertebral implant and extending from a second entry opening formed in the top wall to a second exit opening formed at least partially in the bottom surface of the top wall and at least partially in a second side surface of the top wall;

the intervertebral implant including a plurality or surface features on the first and second side surfaces of the top wall and also on first and second side surfaces of the bottom wall, wherein the surface features are on at least middle portions of the first and second side surfaces of the top wall and first and second side surfaces of the bottom wall;

the intervertebral implant including a first indentation on the [[a]] first outer side surface of the first sidewall of the intervertebral implant and a second indentation on the [[a]] second outer side surface of the second sidewall of the intervertebral implant, the first indentation having a first bottom boundary positioned closer to the top surface of the top wall than to a bottom of the bottom wall such that an entirety of the first indentation is positioned closer to the top surface of the top wall than to the bottom of the bottom wall, and the second indentation having a second bottom

boundary positioned closer to the top surface of the top wall than to the bottom of the bottom wall such that an entirety of the second indentation is positioned closer to the top surface of the top wall than to the bottom of the bottom wall ~~formed on the first surface and bounded by a top boundary and a bottom boundary, the bottom boundary of the first indentation positioned closer to a juncture of the first surface with the top wall than to a juncture of the first surface with the bottom wall~~; and

a tool comprising:

an elongate shaft having a first end and a second end; and

a gripper at the first end of the elongate shaft, the gripper comprising a first prong and a second prong,

wherein the first prong and the second prong are capable of respectively engaging the first indentation and the second indentation of the intervertebral implant.

34. (Currently Amended) The implant system of claim 33, wherein the ~~internal screw hole is a first internal screw hole, and the intervertebral implant further comprises a~~ second internal screw hole is configured to orient a screw in a different direction than the first internal screw hole, the implant system further comprising:

a first screw disposed in the first internal screw hole and at least partially within the intervertebral implant; and

a second screw disposed in the second internal screw hole and at least partially within the intervertebral implant; wherein each of the first internal screw hole and second internal screw hole is angled to bi-directionally orient the first screw and the second screw in opposite directions.

35-40. (Cancelled).

41. (Previously Presented) The intervertebral implant of claim 21, wherein the side surface of the top wall and a side surface of the bottom wall are each patterned with a plurality of surface features to create a rough side surface of the intervertebral cage.

42. (Previously Presented) The intervertebral implant of claim 41, wherein at least some of the plurality of surface features are positioned on the side surface of the top wall closer to the top surface of the top wall than the exit opening.

43. (Previously Presented) The intervertebral implant of claim 42, wherein the plurality of surface features are ridges extending from the side surface of the top wall and the side surface of the bottom wall, the ridges positioned around the open space capable of receiving bone filling for biological bone fusion.

44. (Cancelled).

45. (Currently Amended) An intervertebral implant system comprising:

a top wall including a top surface, a first side surface perpendicular to the top surface, a second side surface opposite of the first side surface, and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure and define an open space capable of receiving bone filling for biological bone fusion;

a substantially circular opening extending substantially normally into the top surface of the top wall; ~~and~~

an indentation extending into the top surface of the top wall at an intersection between the top surface of the top wall and the first side surface of the top wall;

a first [[an]] internal screw hole extending from a first [[an]] entry opening formed in the top wall to a first [[an]] exit opening formed at least partially in the bottom surface of the top wall and at least partially in the first [[a]] side surface of the top wall; and ~~, the internal screw hole having a widened portion and a narrowed portion, the widened portion extending into the top wall from the entry opening and configured to~~

~~recess a screw head below the top surface of the top wall, the narrowed portion coupled to the widened portion and configured to receive a screw body~~

a second internal screw hole extending from a second entry opening formed in the top wall to a second exit opening formed at least partially in the bottom surface of the top wall and at least partially in the second side surface of the top wall.

46. (Cancelled).

47. (Currently Amended) The intervertebral implant system of claim 45 [[46]], wherein the substantially circular opening is formed in the indentation ~~substantially rectangular opening~~.

48. (Previously Presented) The intervertebral implant system of claim 45, wherein the intervertebral implant system does not include a faceplate to retain the screw head in the internal screw guide.

49. (Cancelled).

50. (Previously Presented) The intervertebral implant of claim 21, wherein the entry opening comprising a beginning of the widened portion is formed only in the top surface of the top wall.

51. (New) The intervertebral implant system of claim 45, wherein the indentation has first and second straight edges when view from a direction normal to the top surface of the top wall, and wherein the first straight edge of the indentation is perpendicular to the second straight edge of the indentation.

52. (New) The intervertebral implant system of claim 45, and further comprising:

means to facilitate incorporation of the intervertebral implant system into and fusion with superior and inferior vertebral bodies, wherein the first side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the second side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the means to facilitate incorporation of the intervertebral implant system into and fusion with superior and inferior vertebral bodies is positioned on the first side surface on at least part of each of the top wall, the bottom wall, and the first and second sidewalls, and wherein the means to facilitate incorporation of the intervertebral implant system into and fusion with superior and inferior vertebral bodies is positioned on the second side surface on at least part of each of the top wall, the bottom wall, and the first and second sidewalls.

53. (New) The intervertebral implant system of claim 45, wherein the first side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the second side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein a first plurality of ridges are positioned on the first side surface with at least a first portion of the first side surface being substantially ridge-free such that the first plurality of ridges cover more of a left side of the first side surface than a right side of the first side surface, and wherein a second plurality of ridges are positioned on the second side surface with at least a first portion of the first side surface being substantially ridge-free.

54. (New) The intervertebral implant system of claim 53, wherein a portion of the first side surface that extends across the bottom wall is substantially ridge-free.

55. (New) The intervertebral implant of claim 21, and further comprising:

means to facilitate incorporation of the intervertebral implant into and fusion with superior and inferior vertebral bodies, wherein the first side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the second side surface extends across each of the top wall, the bottom wall, and the first and second

sidewalls, wherein the means to facilitate incorporation of the intervertebral implant into and fusion with superior and inferior vertebral bodies is positioned on the first side surface on at least part of each of the top wall, the bottom wall, and the first and second sidewalls, and wherein the means to facilitate incorporation of the intervertebral implant into and fusion with superior and inferior vertebral bodies is positioned on the second side surface on at least part of each of the top wall, the bottom wall, and the first and second sidewalls.

56. (New) The intervertebral implant of claim 55, wherein a portion of the first side surface that extends across the bottom wall is substantially ridge-free.

57. (New) The intervertebral implant of claim 21, wherein the first side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the second side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein a first plurality of ridges are positioned on the first side surface with at least a first portion of the first side surface being substantially ridge-free such that the first plurality of ridges cover more of a left side of the first side surface than a right side of the first side surface, and wherein a second plurality of ridges are positioned on the second side surface with at least a first portion of the first side surface being substantially ridge-free.

Electronic Acknowledgement Receipt	
EFS ID:	48236171
Application Number:	17706873
International Application Number:	
Confirmation Number:	1103
Title of Invention:	BI-DIRECTIONAL FIXATING TRANSVERTEBRAL BODY SCREWS AND POSTERIOR CERVICAL AND LUMBAR INTERARTICULATING JOINT CALIBRATED STAPLING DEVICES FOR SPINAL FUSION
First Named Inventor/Applicant Name:	Ahmnon D. Moskowitz
Customer Number:	26191
Filer:	Kiersten M. Batzli/Emily Whitcomb
Filer Authorized By:	Kiersten M. Batzli
Attorney Docket Number:	46440-0009017
Receipt Date:	30-JUN-2023
Filing Date:	29-MAR-2022
Time Stamp:	12:35:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Drawings-only black and white line drawings	ReplacementDrawings.pdf	900053 30ee0133d47c9993386ca89cf073fa3920c3e677	no	3
Warnings:					

Information:					
2		ResponsetoOA.PDF	160450 0b13aa479d3f6924dc57e009f53f82291b171e8b	yes	16

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Request for Reconsideration-After Non-Final Rejection	1	1
	Specification	2	2
	Claims	3	11
	Drawings-only black and white line drawings	12	12
	Applicant Arguments/Remarks Made in an Amendment	13	16

Warnings:	
Information:	
Total Files Size (in bytes):	1060503

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

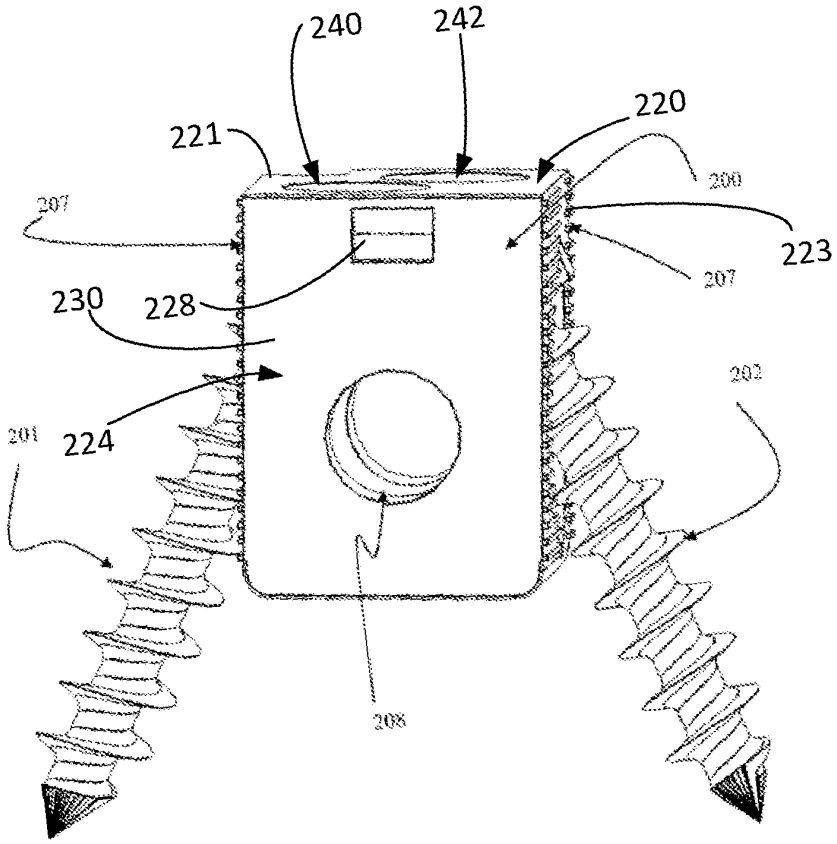


Fig. 2A

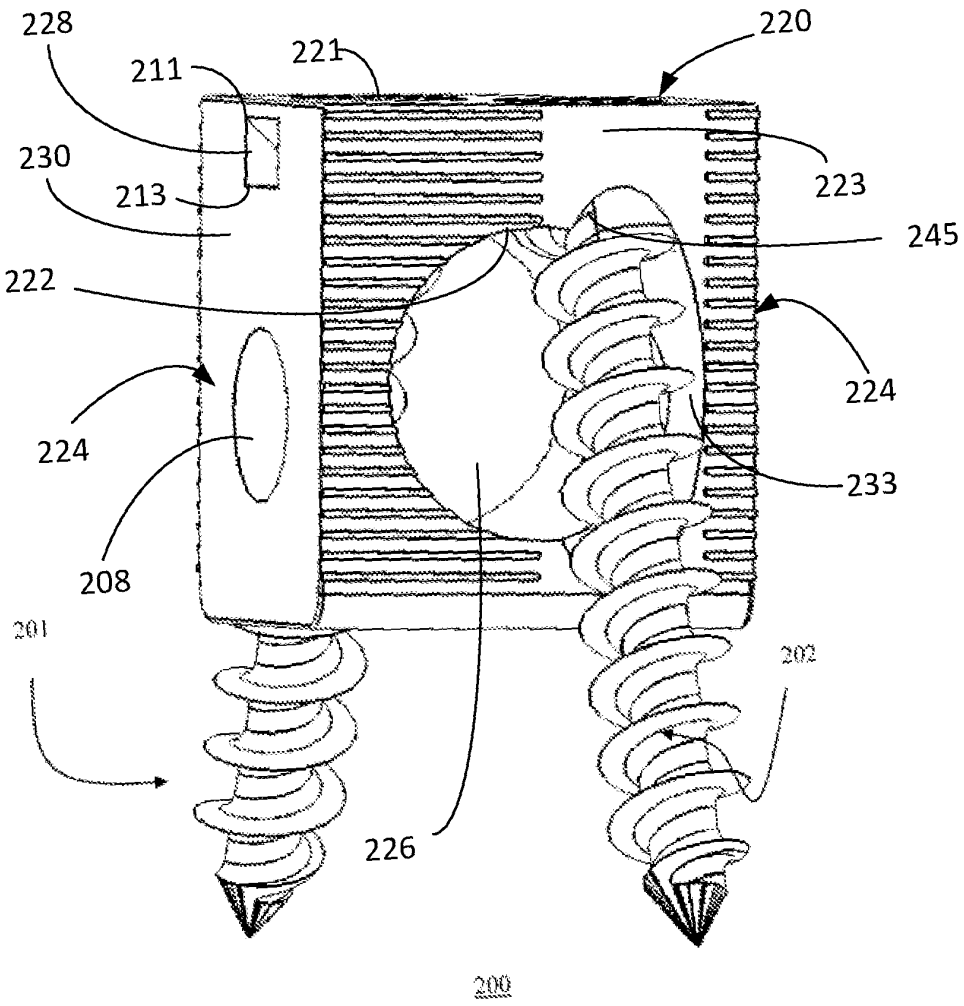

228
211
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Fig. 2B

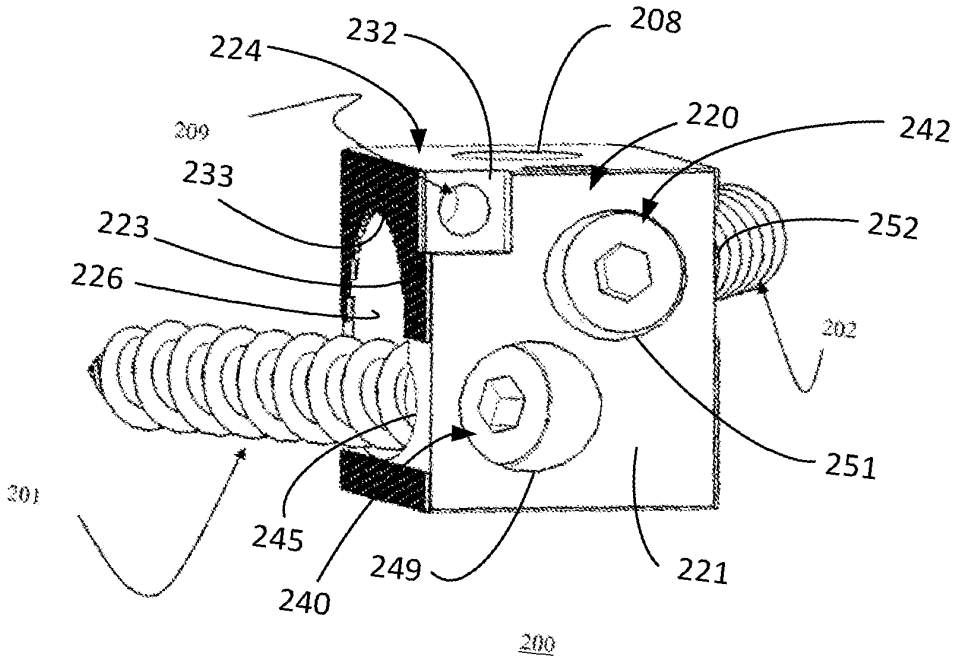

224
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Fig. 2C

Amendments to the Drawings:

The attached replacement sheets of drawings (3) includes changes to Figs. 2A-2C and replace the original sheets including Figs. 2A-2C.

In Figures 2A-2C, reference numerals and lead lines are revised to correspond to the reference numerals associated with the structures recited in the claims in newly amended paragraph [0064.1].

Attachments following last page of this Amendment:

Replacement Sheet (3 pages including Figs. 2A, 2B, and 2C)

REMARKS

Claims 21-26, 28, 30, 32-34, 41-43 and 45-40 are pending, and claims 21, 33 and 45 are independent. With this response, claims 22, 25, 26, 28, 36, 46, 49 are cancelled and claims 23, 30, 32, 33, 34, 45, 47 are amended, without prejudice. Claims 51-57 are added. The amendments and new claims are fully supported by the application as filed, and no new matter is added.

Drawings

The drawings were objected to under 37 C.F.R. § 1.83(a). Without necessarily conceding the rejections but to further prosecution, amendments have been made.

Regarding the screws 201 and 202, claims have been amended to remove the identified claim language, thus rendering this objection moot.

Regarding the sidewall (element 224) in Figures 2A and 2B, a Replacement Sheet has been included herewith to amend Figures 2B and 2C to use reference number 224 instead of reference number 225. Additionally, paragraph [0064.1] has been amended. Applicant believes that these amendments render this objection moot.

Specification

The specification amendments were not entered for certain alleged non-conformities. Without conceding the merits of the allegations but to further prosecution, amendments have been made to paragraph [0064.1] as introduced in the Office Action response of December 9, 2022. The title of the application is also amended to reflect the claimed subject matter.

Regarding the issue raised as to the "narrowed" and "widened" portions, the identified language has been removed from amended paragraph [0064.1] and corresponding amendments have been made to the claims and Figures 2A-2C in the Replacement Sheets. Accordingly, these amendments render this issue moot.

Regarding the identified reference numbers 201 and 208, Applicant believes that the amendments to paragraph [0064.1] address the issues raised in the Office Action. Accordingly, these amendments render this issue moot.

Claim Rejections - 35 U.S.C. § 112

Claims 21-26, 28, 30, 32-34, 36, 41-43 and 45-50 are rejected under 35 U.S.C. § 112(a) or 35 U.S.C. § 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement.

Regarding the issue raised as to the "narrowed" and "widened" portions, the identified language has been removed from amended paragraph [0064.1] and corresponding amendments have been made to the claims and Figures 2A-2C in the Replacement Sheets. Accordingly, these amendments render this rejection moot.

Claim Rejections - 35 U.S.C. §§ 102 and 103

Claim(s) 21-26, 28, 30 and 41-43 were rejected under pre-AIA 35 U.S.C. § 102(e) as being anticipated by Waugh '000 (U.S. 8,268,000 B2). Claim 32 was rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Waugh '000. Claims 33, 34, and 36 were rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Waugh '000 in view of Waugh 2008 Pub (U.S. 2008/0249569). Claims 45-49 were rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Waugh '000 in view of Ferree (U.S. 2004/0122424 Al). Without conceding the merits of the rejection but to further prosecution, claims have been amended.

For example, claim 21 as amended recites at least the following features that are not taught by the cited references, alone or in combination: "a substantially circular opening extending substantially normally into the top surface of the top wall; an indentation extending into the top surface of the top wall at an intersection between the top surface of the top wall and the first side surface of the top wall, wherein the indentation has first and second straight edges when view from a direction normal to the top surface of the top wall, and wherein the first straight edge of the indentation is perpendicular to the second straight edge of the indentation." Accordingly, claim 21 and all claims depending therefrom are patentable over the cited references for at least this reason.

For example, claim 33 as amended recites at least the following features that are not taught by the cited references, alone or in combination:

> the intervertebral implant including a plurality or surface features on the first and second side surfaces of the top wall and also on first and second side surfaces of the bottom wall, wherein the surface features are on at least middle portions of the first and second side surfaces of the top wall and the first and second side surfaces of the bottom wall;
> the intervertebral implant including a first indentation on the first outer side surface of the first sidewall of the intervertebral implant and a second indentation on the second outer side surface of the second sidewall of the intervertebral implant, the first indentation having a first bottom boundary positioned closer to the top surface of the top wall than to a bottom of the bottom wall such that an entirety of the first indentation is positioned closer to the top surface of the top wall than to the bottom of the bottom wall, and the second indentation having a second bottom boundary positioned closer to the top surface of the top wall than to the bottom of the bottom wall such that an entirety of the second indentation is positioned closer to the top surface of the top wall than to the bottom of the bottom wall

Accordingly, claim 33 and all claims depending therefrom are patentable over the cited references for at least this reason.

For example, claim 45 as amended recites at least the following features that are not taught by the cited references, alone or in combination: "a substantially circular opening extending substantially normally into the top surface of the top wall; an indentation extending into the top surface of the top wall at an intersection between the top surface of the top wall and the first side surface of the top wall." Accordingly, claim 45 and all claims depending therefrom are patentable over the cited references for at least this reason.

In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. §§ 102 and 103.

New Claims

New claims 51-57 depend, directly or indirectly, from claims 21, 33, and 45, and are patentable over the prior art of record for at least the same reasons, and for the additional combinations recited therein.

CONCLUSION

By responding in the foregoing remarks only to particular positions taken in the action, Applicant does not acquiesce with other positions that have not been explicitly addressed. In addition, Applicant's selecting some particular arguments for the patentability of a claim should not be understood as implying that no other reasons for the patentability of that claim exist. Finally, Applicant's decision to amend or cancel any claims should not be understood as implying that Application agrees with any positions taken in the action with reference to that claim or other claims, or that Applicant adopts or agrees with any position except as specifically stated in this paper. In particular, by amending a claim, Applicant does not necessarily concede that the claim prior to amendment was unpatentable.

Applicant believes no fees are due with this reply. However, if a fee is due, please apply those fees and other necessary charges or credits to Deposit Account 06-1050, referencing the above attorney docket number.

Respectfully submitted,

Date: June 30, 2023

/Kiersten M. Batzli/
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Facsimile: (877) 769-7945

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Notice of References Cited	Application/Control No. 17/706,873	Applicant(s)/Patent Under Reexamination Moskowitz et al.	
	Examiner ELLEN C HAMMOND	Art Unit 3773	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20090030520-A1	01-2009	Biedermann; Lutz	A61F2/447	606/301
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

CPC - Searched*		
Symbol	**Date**	**Examiner**
A61F2/447 and 4455	09/14/2022	ECH
A61F2002/448	09/14/2022	ECH
Above - UPDATED	12/23/2022	ECH
Above - UPDATED	03/31/2023	ECH
Above - UPDATED	07/28/2023	ECH

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	**Date**	**Examiner**
IPR2020-01307 Reviewed Inter Partes Review of U.S. Patent No. 8,353,913	09/14/2022	ECH
IPR2020-01308 Reviewed Inter Partes Review of U.S. Patent No. 9,889,022	09/14/2022	ECH
Performed an inventor and assignee search. Reviewed Dossier references. Reviewed cited references in family. Performed a text search in ip.com.	09/14/2022	ECH

/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/14/2022	12/23/2022	03/31/2023	07/28/2023					
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	3	-	-	-	-					
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	31	N	-	-	-					
	32	✓	✓	✓	✓					
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	34	✓	✓	✓	O					
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	37	-	-	-	-					
	38	-	-	-	-					
	39	-	-	-	-					
	40	-	-	-	-					
	41	✓	✓	✓	✓					
	42	✓	✓	✓	✓					

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	**Art Unit**
	ELLEN C HAMMOND	3773

CLAIM		DATE								
Final	Original	09/14/2022	12/23/2022	03/31/2023	07/28/2023					
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	46		✓	✓	-					
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	48		✓	✓	✓					
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	50			✓	✓					
	51				✓					
	52				✓					
	53				✓					
	54				✓					
	55				✓					
	56				✓					
	57				✓					

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L101	455	a61f2/447,4455.cpc. AND @pd>="20230331"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/07/28 04:52 PM
L102	38	a61f2002/448.cpc. AND @pd>="20230331"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/07/28 04:54 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

26191 7590 08/03/2023

FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
HAMMOND, ELLEN CHRISTINA	

ART UNIT	PAPER NUMBER
3773	

NOTIFICATION DATE	DELIVERY MODE
08/03/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No. 17/706,873	Applicant(s) Moskowitz et al.	
	Examiner ELLEN C HAMMOND	Art Unit 3773	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 06/30/2023.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 21,23-24,30,32-34,41-43,45,47-48 and 50-57 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 21,23-24,30,32,41-43,45,47-48 and 50-57 is/are rejected.

8) ☑ Claim(s) 33-34 is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☑ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 06/30/2023 is/are: a)☐ accepted or b)☑ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application is being examined under the pre-AIA first to invent provisions.

This Office action is in response to the amendment filed 06/30/2023. Claims 21, 23, 24, 30, 32-34, 41-43, 45, 47, 48 and 50-57 are pending.

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: a description of the "means to facilitate incorporation of the intervertebral implant into and fusion with superior and inferior vertebral bodies."

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the means to facilitate incorporation of the intervertebral implant into and fusion with superior and inferior vertebral bodies must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional

replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Interpretation

The following is a quotation of 35 U.S.C. 112(f):

> (f) Element in Claim for a Combination. – An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

The following is a quotation of pre-AIA 35 U.S.C. 112, sixth paragraph:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

The claims in this application are given their broadest reasonable interpretation using the plain meaning of the claim language in light of the specification as it would be understood by one of ordinary skill in the art. The broadest reasonable interpretation of a claim element (also commonly referred to as a claim limitation) is limited by the description in the specification when 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, is invoked.

As explained in MPEP § 2181, subsection I, claim limitations that meet the following three-prong test will be interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph:

(A) the claim limitation uses the term "means" or "step" or a term used as a substitute for "means" that is a generic placeholder (also called a nonce term or a non-structural term having no specific structural meaning) for performing the claimed function;

(B) the term "means" or "step" or the generic placeholder is modified by functional language, typically, but not always linked by the transition word "for" (e.g., "means for") or another linking word or phrase, such as "configured to" or "so that"; and

(C) the term "means" or "step" or the generic placeholder is not modified by sufficient structure, material, or acts for performing the claimed function.

Use of the word "means" (or "step") in a claim with functional language creates a rebuttable presumption that the claim limitation is to be treated in accordance with 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph. The presumption that the claim limitation is interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, is rebutted when the claim limitation recites sufficient structure, material, or acts to entirely perform the recited function.

Absence of the word "means" (or "step") in a claim creates a rebuttable presumption that the claim limitation is not to be treated in accordance with 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph. The presumption that the claim limitation is not interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, is rebutted when the claim limitation recites function without reciting sufficient structure, material or acts to entirely perform the recited function.

Claim limitations in this application that use the word "means" (or "step") are being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, except as otherwise indicated in an Office action. Conversely, claim limitations in this application that do not use the word "means" (or "step") are not being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, except as otherwise indicated in an Office action.

Claim Objections

Claims 21, 23, 24, 30-34, 41-43, 50 and 55-57 are objected to because of the following informalities:

In claim 21, line 14, change "view" to --viewed--.

In claim 33, line 28, change "or" to --of--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 21, 23, 24, 30, 32, 41-43, 45, 47, 48 and 50-57 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor (or for applications subject to pre-AIA 35 U.S.C. 112, the applicant), regards as the invention.

In claim 21, line 19, applicant reciters "a side surface of the top wall." The recitation is indefinite because applicant previously recites that the top wall includes a first side surface and a second side surface in lines 2-4. Accordingly, one can't determine if applicant is referencing one of the previously recited first side surface or second side surface, or if applicant is referencing a third side surface.

It is also noted that claims 21 and 45 use the term "substantially" before "circular opening" and "normally" in line 10. It is noted that opening 209 is in fact circular and normal to the top surface of the top wall. The specification and drawings fail to disclose opening 209 to be any other shape or located in

any other manner than normal to the top surface of the top wall. Accordingly, the use of the term "substantially" fails to particularly point out and distinctly claim the circular opening and its relationship to the top surface of the top wall.

Claim 41, recites "the side surface of the top wall" in lines 1-2. The recitation is indefinite because applicant previously recites that the top wall includes a first side surface and a second side surface in lines 2-4. Accordingly, one can't determine if applicant is referencing one of the previously recited first side surface or second side surface, or if applicant is referencing the side surface recited in line 19 of claim 21.

Claim 42 is indefinite as it is not clear which "side surface" applicant is referencing back to.

Claim 43 is indefinite as it is not clear which "side surface" applicant is referencing back to.

Claim 50 recites the limitation "the widened portion" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 55 recites "means to facilitate incorporation of the intervertebral implant into and fusion with superior and inferior vertebral bodies." It is unclear from the specification and drawings the "means" applicant is referencing.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory

action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELLEN HAMMOND whose telephone number is (571)270-3819. The examiner can normally be reached Monday-Friday 8 - 4 PM .

If attempts to reach the examiner by telephone are unsuccessful, ***please contact*** **the examiner's supervisor, Eduardo C. Robert, *at* 571 272-4719**. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ELLEN C HAMMOND/
Primary Examiner, Art Unit 3773

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/706,873	Filing Date 03/29/2022	☐ To be Mailed

ENTITY: ☐ LARGE ☑ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $240 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	11/22/2023	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 21	Minus	** 20	= 1		x $40 =	40
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $192 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	40

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/DAWN BREWER/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/706,873	**11/22/2023 02:15:41 PM Z ET**	**46440-0009017**

Title of Invention

INRERVERTEBRAL IMPLANT AND TOOL ASSEMBLY

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1103	FILED BY	Emily Whitcomb
PATENT CENTER #	63359008	AUTHORIZED BY	Stuart Nelson
CUSTOMER #	26191	FILING DATE	03/29/2022
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Ahmnon D. Moskowitz

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
DA / 061050	E2023ALE17067659	Emily Whitcomb

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
2251	EXTENSION FOR RESPONSE WITHIN FIRST MONTH	88.00	1	88.00
			TOTAL AMOUNT:	**$88.00**

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: A.NE.AFCP
Document Description: After Final Consideration Program Request

PTO/SB/434 (3-22)

CERTIFICATION AND REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0

Practitioner Docket No.:	Application No.:	Filing Date:
46440-0009017	17/706,873	March 29, 2022
First Named Inventor:	**Title:**	
Ahmnon D. Moskowitz	INTERVERTEBRAL IMPLANT AND TOOL ASSEMBLY	

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0 (AFCP 2.0) OF THE ACCOMPANYING RESPONSE UNDER 37 CFR 1.116.

1. The above-identified application is (i) an original utility, plant, or design nonprovisional application filed under 35 U.S.C. 111(a) [a continuing application (e.g., a continuation or divisional application) is filed under 35 U.S.C. 111(a) and is eligible under (i)], or (ii) an international application that has entered the national stage in compliance with 35 U.S.C. 371(c).
2. The above-identified application contains an outstanding final rejection.
3. Submitted herewith is a response under 37 CFR 1.116 to the outstanding final rejection. The response includes an amendment to at least one independent claim, and the amendment does not broaden the scope of the independent claim in any aspect.
4. This certification and request for consideration under AFCP 2.0 is the only AFCP 2.0 certification and request filed in response to the outstanding final rejection.
5. Applicant is willing and available to participate in any interview requested by the examiner concerning the present response.
6. This certification and request is being filed electronically using the Office's electronic filing system.
7. Any fees that would be necessary consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, extension of time fees, are being concurrently filed herewith. [There is no additional fee required to request consideration under AFCP 2.0.]
8. By filing this certification and request, applicant acknowledges the following:

- Reissue applications and reexamination proceedings are not eligible to participate in AFCP 2.0.
- The examiner will verify that the AFCP 2.0 submission is compliant, *i.e.*, that the requirements of the program have been met (see items 1 to 7 above). For compliant submissions:
  - The examiner will review the response under 37 CFR 1.116 to determine if additional search and/or consideration (i) is necessitated by the amendment and (ii) could be completed within the time allotted under AFCP 2.0. If additional search and/or consideration is required but cannot be completed within the allotted time, the examiner will process the submission consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, by mailing an advisory action.
  - If the examiner determines that the amendment does not necessitate additional search and/or consideration, or if the examiner determines that additional search and/or consideration is required and could be completed within the allotted time, then the examiner will consider whether the amendment places the application in condition for allowance (after completing the additional search and/or consideration, if required). If the examiner determines that the amendment does not place the application in condition for allowance, then the examiner will contact the applicant and request an interview.
    - The interview will be conducted by the examiner, and if the examiner does not have negotiation authority, a primary examiner and/or supervisory patent examiner will also participate.
    - If the applicant declines the interview, or if the interview cannot be scheduled within ten (10) calendar days from the date that the examiner first contacts the applicant, then the examiner will proceed consistent with current practice concerning responses after final rejection under 37 CFR 1.116.

Signature	Date	Practitioner Registration No.
/Stuart A. Nelson/	11/22/23	63,947
Name (Print/Typed)	**Telephone number**	
Stuart A. Nelson	(612) 337-2538	

***Note**: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.*

☐ * Total of _____ forms are submitted.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	:	Ahmnon D. Moskowitz	Art Unit	:	3773
Application No.	:	17/706,873	Examiner	:	Ellen Christina Hammond
Filed	:	March 29, 2022			
			Conf. No.	:	1103
Title	:	INTERVERTEBRAL IMPLANT AND TOOL ASSEMBLY			

MAIL STOP AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY TO ACTION OF AUGUST 3, 2023

Please consider the following reply.

Amendments to Claims:
Listing of Claims.

1-20. (Cancelled).

21. (Currently Amended) An intervertebral implant comprising:

a top wall including a top surface, a first side surface perpendicular to the top surface, a second side surface opposite of the first side surface, and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure and define an open space capable of receiving bone filling for biological bone fusion;

a ~~substantially~~ circular opening extending ~~substantially~~ normally into the top surface of the top wall;

an indentation extending into the top surface of the top wall at an intersection between the top surface of the top wall and the first side surface of the top wall, wherein the indentation has first and second straight edges when viewed [[view]] from a direction normal to the top surface of the top wall, and wherein the first straight edge of the indentation is perpendicular to the second straight edge of the indentation; and

an internal screw hole defined by the intervertebral implant and extending from an entry opening formed in the top wall to an exit opening formed at least partially in the bottom surface of the top wall and at least partially in one of the first and second side surfaces ~~a side surface~~ of the top wall;

wherein the intervertebral implant does not include a faceplate to retain the screw in the internal screw hole.

22. (Cancelled).

23. (Previously Presented) The intervertebral implant of claim 21, wherein the exit opening of the internal screw hole is configured such that the screw body extending through the internal screw hole exits at the exit opening at least partially into the open space.

24. (Previously Presented) The intervertebral implant of claim 23, wherein the intervertebral implant is configured to be inserted into a disc space between a first vertebral body and a second vertebral body and to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion.

25. (Cancelled).

26. (Cancelled).

27. (Cancelled).

28. (Cancelled).

29. (Cancelled).

30. (Previously Presented) The intervertebral implant of claim 21, wherein the internal screw hole is a first internal screw hole, and the intervertebral implant further comprises:

at least a second internal screw hole extending from a second entry opening formed in the top wall to a second exit opening, the second internal screw hole oriented in a different direction than the first internal screw hole.

31. (Cancelled).

32. (Previously Presented) The intervertebral implant of claim 21, further comprising:

a first outer indentation on a first outer side surface of the first sidewall;

a second outer indentation on a second outer side surface of the second sidewall, wherein the second outer indentation is positioned opposite of the first outer indentation, wherein an entirety of the first outer indentation is positioned closer to the top surface of the top wall than to a bottom of the bottom wall, and an entirety of the second outer indentation is positioned closer to the top surface of the top wall than to the bottom of the bottom wall.

33. (Currently Amended) An implant system comprising:

an intervertebral implant comprising:

a top wall including a top surface and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall having a first outer side surface;

a second sidewall having a second outer side surface positioned opposite the first outer side surface of the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure and define an open space capable of receiving bone filling for biological bone fusion, and wherein the first sidewall and the second sidewall define apertures from their respective first and second outer side surfaces to respective first and second inner side surfaces, the apertures connected to the open space and configured to promote biological bone fusion through the first sidewall and the second sidewall; and

a first internal screw hole defined by the intervertebral implant and extending from a first entry opening formed in the top wall to a first exit opening formed at least partially in the bottom surface of the top wall and at least partially in a first side surface of the top wall;

a second internal screw hole defined by the intervertebral implant and extending from a second entry opening formed in the top wall to a second exit opening formed at least partially in the bottom surface of the top wall and at least partially in a second side surface of the top wall;

the intervertebral implant including a plurality of [[or]] surface features on the first and second side surfaces of the top wall and also on first and second side surfaces of the bottom wall, wherein the surface features are on at least middle portions of the first and second side surfaces of the top wall and first and second side surfaces of the bottom wall;

the intervertebral implant including a first indentation on the first outer side surface of the first sidewall of the intervertebral implant and a second indentation on the second outer side surface of the second sidewall of the intervertebral implant, the first indentation having a first bottom boundary positioned closer to the top surface of the top wall than to a bottom of the bottom wall such that an entirety of the first indentation is positioned closer to the top surface of the top wall than to the bottom of the bottom wall, and the second indentation having a second bottom boundary positioned closer to the top surface of the top wall than to the bottom of the bottom wall such that an entirety of the second indentation is positioned closer to the top surface of the top wall than to the bottom of the bottom wall; and

a tool comprising:

an elongate shaft having a first end and a second end; and

a gripper at the first end of the elongate shaft, the gripper comprising a first prong and a second prong,

wherein the first prong and the second prong are capable of respectively engaging the first indentation and the second indentation of the intervertebral implant.

34. (Previously Presented) The implant system of claim 33, wherein the second internal screw hole is configured to orient a screw in a different direction than the first internal screw hole, the implant system further comprising:

a first screw disposed in the first internal screw hole and at least partially within the intervertebral implant; and

a second screw disposed in the second internal screw hole and at least partially within the intervertebral implant; wherein each of the first internal screw hole and second

internal screw hole is angled to bi-directionally orient the first screw and the second screw in opposite directions.

35-40. (Cancelled).

41. (Currently Amended) The intervertebral implant of claim 21, wherein at least one of the first and second side surfaces ~~the side surface~~ of the top wall and a side surface of the bottom wall are each patterned with a plurality of surface features to create a rough side surface of the intervertebral cage.

42. (Currently Amended) The intervertebral implant of claim 41, wherein at least some of the plurality of surface features are positioned on at least one of the first and second side surfaces ~~the side surface~~ of the top wall closer to the top surface of the top wall than the exit opening.

43. (Currently Amended) The intervertebral implant of claim 42, wherein the plurality of surface features are ridges extending from at least one of the first and second side surfaces ~~the side surface~~ of the top wall and the side surface of the bottom wall, the ridges positioned around the open space capable of receiving bone filling for biological bone fusion.

44. (Cancelled).

45. (Currently Amended) An intervertebral implant system comprising:

a top wall including a top surface, a first side surface perpendicular to the top surface, a second side surface opposite of the first side surface, and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure and define an open space capable of receiving bone filling for biological bone fusion;

a ~~substantially~~ circular opening extending ~~substantially~~ normally into the top surface of the top wall;

an indentation extending into the top surface of the top wall at an intersection between the top surface of the top wall and the first side surface of the top wall;

a first internal screw hole extending from a first entry opening formed in the top wall to a first exit opening formed at least partially in the bottom surface of the top wall and at least partially in the first side surface of the top wall; and a second internal screw hole extending from a second entry opening formed in the top wall to a second exit opening formed at least partially in the bottom surface of the top wall and at least partially in the second side surface of the top wall.

46. (Cancelled).

47. (Currently Amended) The intervertebral implant system of claim 45, wherein the ~~substantially~~ circular opening is formed in the indentation.

48. (Previously Presented) The intervertebral implant system of claim 45, wherein the intervertebral implant system does not include a faceplate to retain the screw head in the internal screw guide.

49. (Cancelled).

50. (Currently Amended) The intervertebral implant of claim 21, wherein the entry opening comprising ~~a beginning of the widened portio~~n is formed only in the top surface of the top wall.

51. (Previously Presented) The intervertebral implant system of claim 45, wherein the indentation has first and second straight edges when view from a direction normal to the top surface of the top wall, and wherein the first straight edge of the indentation is perpendicular to the second straight edge of the indentation.

52. (Previously Presented) The intervertebral implant system of claim 45, and further comprising:

means to facilitate incorporation of the intervertebral implant system into and fusion with superior and inferior vertebral bodies, wherein the first side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the second side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the means to facilitate incorporation of the intervertebral implant system into and fusion with superior and inferior vertebral bodies is positioned on the first side surface on at least part of each of the top wall, the bottom wall, and the first and second sidewalls, and wherein the means to facilitate incorporation of the intervertebral implant system into and fusion with superior and inferior vertebral bodies is positioned on the second side surface on at least part of each of the top wall, the bottom wall, and the first and second sidewalls.

53. (Previously Presented) The intervertebral implant system of claim 45, wherein the first side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the second side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein a first plurality of ridges are positioned on the first side surface with at least a first portion of the first side surface being substantially ridge-free such that the first plurality of ridges cover more of a left side of the first side surface than a right side of the first side surface, and wherein a second plurality of ridges are positioned on the second side surface with at least a first portion of the first side surface being substantially ridge-free.

54. (Previously Presented) The intervertebral implant system of claim 53, wherein a portion of the first side surface that extends across the bottom wall is substantially ridge-free.

55. (Previously Presented) The intervertebral implant of claim 21, and further comprising:

means to facilitate incorporation of the intervertebral implant into and fusion with superior and inferior vertebral bodies, wherein the first side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the second side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the means to facilitate incorporation of the intervertebral implant into and fusion with superior and inferior vertebral bodies is positioned on the first side surface on at least part of each of the top wall, the bottom wall, and the first and second sidewalls, and wherein the means to facilitate incorporation of the intervertebral implant into and fusion with superior and inferior vertebral bodies is positioned on the second side surface on at least part of each of the top wall, the bottom wall, and the first and second sidewalls.

56. (Previously Presented) The intervertebral implant of claim 55, wherein a portion of the first side surface that extends across the bottom wall is substantially ridge-free.

57. (Previously Presented) The intervertebral implant of claim 21, wherein the first side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the second side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein a first plurality of ridges are positioned on the first side surface with at least a first portion of the first side surface being substantially ridge-free such that the first plurality of ridges cover more of a left side of the first side surface than a right side of the first side surface, and wherein a second plurality of ridges are positioned on the second side surface with at least a first portion of the first side surface being substantially ridge-free.

REMARKS

Claims 21, 23-24, 30, 32-34, 41-43, 45, 47-48 and 50-57 are pending. With this response, claims 21, 33, 41, 42, 43, 45, 47, and 50 are amended.

Specification

The specification was objected to as failing to provide proper antecedent basis for the claimed subject matter. The office action stated: "Correction of the following is required: a description of the 'means to facilitate incorporation of the intervertebral implant into and fusion with superior and inferior vertebral bodies.'"

Applicant respectfully contends that a description of this feature is already provided in the specification, including at least in paragraphs 0064-0065[1] and Figures 1A-1E, 2A-2C among others. For example, paragraphs 0064-0065 recite:

> Transvertebral screw 101 penetrates the top base 103, and transvertebral screw 102 traverses the bottom base 104 of the screw box 100. The two screws 101, 102 traverse the screw box 100 in opposing directions, bi-directionally (whether they are lateral or medially oriented). The external edges of the triangular bases 103, 104 in contact with vertebral body surfaces include ridges 107. **This facilitates the screw box's 100 incorporation into and fusion with the superior and inferior vertebral bodies** (FIGS. 1A-E). Both top and bottom screw box bases 103, 104 are perforated with holes 108 to allow bone placement for fusion. The entire construct, furthermore, is hollow to allow bone filling. Hence this device functions as both an intervertebral bone fusion spacer and bi-directional transvertebral screw fusion device.
>
> FIGS. 2A-C illustrate three-dimensional views of the Lumbar intervertebral non-expandable screw box 200 with two BDFT screws 201, 202 (Embodiment II). Screws 201 and 202 perforate and orient in opposing, superior and inferior directions. There are holes 208 and hollow spaces allowing packaging with bone. There are also holes which allow the traversal of screws. **The superior and inferior edges include ridges 207 to facilitate integration and fusion with superior and inferior vertebral bodies**. The expandable screw box 200 may include a screw insert 209 to attach a horizontal mini-plate (not shown). The self-contained internalized drill guides are at a 25 degree angle. The screw boxes can

[1] Paragraphs 0064-0065 were filed as paragraphs 0063-0064 but are renumbered after the preliminary amendment replacing paragraph 0001 with new paragraphs 0001 and 0002.

be designed with the internalized drill guides with different angles and/or different positions within the box.

Accordingly, applicant respectfully requests withdrawal of this objection.

Drawings

The drawings were objected to under 37 CFR 1.83(a).

Applicant respectfully contends that the claimed "means to facilitate incorporation of the intervertebral implant into and fusion with superior and inferior vertebral bodies" is already shown and described in the figures and in the specification, such as at least paragraphs 0064-0065 and Figures 1A-1E, 2A-2C among others. Accordingly, applicant respectfully requests withdrawal of this objection.

Claim Objections

Claims 21, 23, 24, 30-34, 41-43, 50 and 55-57 were objected to because of certain informalities.

Claims 21 and 33 have been amended as recommended.

Claim Rejections - 35 USC § 112

Claims 21, 23, 24, 30, 32, 41-43, 45, 47, 48 and 50-57 were rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite.

Without conceding the merits of the rejection but to further prosecution, claims 21, 33, 41, 42, 43, 45, 47, and 50 have been amended. Thus, this rejection is moot with respect to these claims.

With respect to claim 55, applicant respectfully disagrees with the rejection. The claim element "means to facilitate incorporation of the intervertebral implant into and fusion with superior and inferior vertebral bodies" is governed under pre-AIA 35 U.S.C. 112, sixth paragraph. As explained above with respect to the objections, a description of this feature is

already provided in the specification, including at least in paragraphs 0064-0065[2] and Figures 1A-1E, 2A-2C among others. For example, paragraphs 0064-0065 recite:

> Transvertebral screw 101 penetrates the top base 103, and transvertebral screw 102 traverses the bottom base 104 of the screw box 100. The two screws 101, 102 traverse the screw box 100 in opposing directions, bi-directionally (whether they are lateral or medially oriented). The external edges of the triangular bases 103, 104 in contact with vertebral body surfaces include ridges 107. **This facilitates the screw box's 100 incorporation into and fusion with the superior and inferior vertebral bodies** (FIGS. 1A-E). Both top and bottom screw box bases 103, 104 are perforated with holes 108 to allow bone placement for fusion. The entire construct, furthermore, is hollow to allow bone filling. Hence this device functions as both an intervertebral bone fusion spacer and bi-directional transvertebral screw fusion device.
>
> FIGS. 2A-C illustrate three-dimensional views of the Lumbar intervertebral non-expandable screw box 200 with two BDFT screws 201, 202 (Embodiment II). Screws 201 and 202 perforate and orient in opposing, superior and inferior directions. There are holes 208 and hollow spaces allowing packaging with bone. There are also holes which allow the traversal of screws. **The superior and inferior edges include ridges 207 to facilitate integration and fusion with superior and inferior vertebral bodies**. The expandable screw box 200 may include a screw insert 209 to attach a horizontal mini-plate (not shown). The self-contained internalized drill guides are at a 25 degree angle. The screw boxes can be designed with the internalized drill guides with different angles and/or different positions within the box.

Accordingly, applicant contends that it is clear from the specification and drawings what this feature is referencing and applicant respectfully requests withdrawal of this rejection.

Request for Reconsideration

The Applicant respectfully requests prompt consideration and a Notice of Allowance. In the event that no Notice of Allowance will be provided in the next communication, Applicant requests that the Examiner telephone the undersigned attorney (612-337-2538) prior to the next communication so that prosecution on the merits may be expedited. It is believed that all of the

[2] Paragraphs 0064-0065 were filed as paragraphs 0063-0064 but are renumbered after the preliminary amendment replacing paragraph 0001 with new paragraphs 0001 and 0002.

pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendments herein do not signify concession of unpatentability of any claims prior to this amendment. Applicant hereby specifically reserves the right to prosecute the previously presented subject matter in a continuing application. Also, Applicant expressly reserves the right to prosecute claims of different or broader scope in a continuing application. The Patent Office should infer no (i) adoption of a position with respect to patentability, (ii) change in the Applicant's position with respect to any claim or subject matter of the invention, or (iii) acquiescence in any way to any position taken by the Office Action, based on the amendments made herein.

Please apply any necessary charges or credits to Deposit Account 06-1050, referencing the above attorney docket number.

Respectfully submitted,

Date: 11/22/23

/Stuart A. Nelson/
Stuart A. Nelson, Reg. No. 63,947

Customer Number 26191
Fish & Richardson P.C.
Telephone: (612) 337-2538
Facsimile: (877) 769-7945

100927845.doc

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/706,873	**11/22/2023 02:15:41 PM Z ET**	**46440-0009017**

Title of Invention

INRERVERTEBRAL IMPLANT AND TOOL ASSEMBLY

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1103	FILED BY	Emily Whitcomb
PATENT CENTER #	63359008	FILING DATE	03/29/2022
CUSTOMER #	26191	FIRST NAMED INVENTOR	Ahmnon D. Moskowitz
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Stuart Nelson

Documents

TOTAL DOCUMENTS: 4

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
AFCP.pdf		1	After Final Consideration Program Request	80 KB
ReplytoFOA.pdf		13	-	144 KB
ReplytoFOA-A.NE.pdf	(1-1)	1	Response After Final Action	61 KB
ReplytoFOA-CLM.pdf	(2-9)	8	Claims	93 KB
ReplytoFOA-REM.pdf	(10-13)	4	Applicant Arguments/Remarks Made in an Amendment	89 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
AFCP.pdf	B892C36D650A7D9C9B01E1B0251BC7CD0154C73C18CFC07F 20F7CA7630CE207E99141F1A2C41DFB3CA63E3EBCCA9F7B4 D1E94AD848900A93D8DA97519352E922
ReplytoFOA.pdf	72267F48CC48D3ED9C9040C40DBDEAB288FD5AE2A6969417 17CD019E055AB47795F0E805EE1E49BA8DA7BEDFF56D36AC 39719EC57CA012F94B49A068CC11B8CC
ReplytoFOA-A.NE.pdf	57B915DAC8F78CE16F89717B82B0EF0C44027B7C3D2293721 B6BF2C269584E594ACCA20420430D041297F8285DC72F9E6C B79865264D495697BCDEC6E32A70E6
ReplytoFOA-CLM.pdf	39B29FDF658EAD7455CCCADC536C9E38E70C05CF329FE80A 2A59A8E3561C0BFC3F17442E4267EDA0A7F3BC1BC2F678ED9 F0F9DAA0AE035D708703575175CE285
ReplytoFOA-REM.pdf	24CD062F6D3973074A58D5EEA3C3A4E97C18AD2897DD3B545 67BE6727436966E6FA47CFD115823AC8C643A54754E46465C4 A877B8AE07EB56329B28787A2C897

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

26191 7590 12/28/2023
FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER
HAMMOND, ELLEN CHRISTINA

ART UNIT	PAPER NUMBER
3773	

DATE MAILED: 12/28/2023

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

TITLE OF INVENTION: INRERVERTEBRAL IMPLANT AND TOOL ASSEMBLY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0.00	$0.00	$480	03/28/2024

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via the USPTO patent electronic filing system.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

26191 7590 12/28/2023
FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via the USPTO patent electronic filing system or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

TITLE OF INVENTION: INRERVERTEBRAL IMPLANT AND TOOL ASSEMBLY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0.00	$0.00	$480	03/28/2024

EXAMINER	ART UNIT	CLASS-SUBCLASS
HAMMOND, ELLEN CHRISTINA	3773	623-017160

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑Issue Fee ❑Publication Fee (if required)

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via the USPTO patent electronic filing system ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

26191 7590 12/28/2023
FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
HAMMOND, ELLEN CHRISTINA	
ART UNIT	**PAPER NUMBER**
3773	

DATE MAILED: 12/28/2023

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. The United States Patent and Trademark Office (USPTO) collects the information in this record under authority of 35 U.S.C. 2. The USPTO's system of records is used to manage all applicant and owner information including name, citizenship, residence, post office address, and other information with respect to inventors and their legal representatives pertaining to the applicant's/owner's activities in connection with the invention for which a patent is sought or has been granted. The applicable Privacy Act System of Records Notice for the information collected in this form is COMMERCE/PAT-TM-7 Patent Application Files, available in the Federal Register at 78 FR 19243 (March 29, 2013).
https://www.govinfo.gov/content/pkg/FR-2013-03-29/pdf/2013-07341.pdf

Routine uses of the information in this record may include disclosure to:

1) law enforcement, in the event that the system of records indicates a violation or potential violation of law;
2) a federal, state, local, or international agency, in response to its request;
3) a contractor of the USPTO having need for the information in order to perform a contract;
4) the Department of Justice for determination of whether the Freedom of Information Act (FOIA) requires disclosure of the record;
5) a Member of Congress submitting a request involving an individual to whom the record pertains, when the individual has requested the Member's assistance with respect to the subject matter of the record;
6) a court, magistrate, or administrative tribunal, in the course of presenting evidence, including disclosures to opposing counsel in the course of settlement negotiations;
7) the Administrator, General Services Administration (GSA), or their designee, during an inspection of records conducted by GSA under authority of 44 U.S.C. 2904 and 2906, in accordance with the GSA regulations and any other relevant (i.e., GSA or Commerce) directive, where such disclosure shall not be used to make determinations about individuals;
8) another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c));
9) the Office of Personnel Management (OPM) for personnel research purposes; and
10) the Office of Management and Budget (OMB) for legislative coordination and clearance.

If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

Notice of Allowability	Application No. 17/706,873	Applicant(s) Moskowitz et al.	
	Examiner ELLEN C HAMMOND	Art Unit 3773	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to the AFCP request filed 11/22/2023.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 21,23-24,30,32-34,41-43,45,47-48 and 50-57 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☑ Other PTO-2323.

/ELLEN C HAMMOND/
Primary Examiner, Art Unit 3773

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

CPC - Searched*		
Symbol	**Date**	**Examiner**
A61F2/447 and 4455	09/14/2022	ECH
A61F2002/448	09/14/2022	ECH
Above - UPDATED	12/23/2022	ECH
Above - UPDATED	03/31/2023	ECH
Above - UPDATED	07/28/2023	ECH
Above - UPDATED	12/12/2023	ECH

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	**Date**	**Examiner**
IPR2020-01307 Reviewed Inter Partes Review of U.S. Patent No. 8,353,913	09/14/2022	ECH
IPR2020-01308 Reviewed Inter Partes Review of U.S. Patent No. 9,889,022	09/14/2022	ECH
Performed an inventor and assignee search. Reviewed Dossier references. Reviewed cited references in family. Performed a text search in ip.com.	09/14/2022	ECH

/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
	See Interference Search History printout.	12/12/2023	ECH

/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/14/2022	12/23/2022	03/31/2023	07/28/2023	12/12/2023				
	1	-	-	-	-	-				
	2	-	-	-	-	-				
	3	-	-	-	-	-				
	4	-	-	-	-	-				
	5	-	-	-	-	-				
	6	-	-	-	-	-				
	7	-	-	-	-	-				
	8	-	-	-	-	-				
	9	-	-	-	-	-				
	10	-	-	-	-	-				
	11	-	-	-	-	-				
	12	-	-	-	-	-				
	13	-	-	-	-	-				
	14	-	-	-	-	-				
	15	-	-	-	-	-				
	16	-	-	-	-	-				
	17	-	-	-	-	-				
	18	-	-	-	-	-				
	19	-	-	-	-	-				
	20	-	-	-	-	-				
1	21	✓	✓	✓	✓	=				
	22	✓	✓	✓	-	-				
2	23	✓	✓	✓	✓	=				
3	24	✓	✓	✓	✓	=				
	25	✓	✓	✓	-	-				
	26	✓	✓	✓	-	-				
	27	✓	-	-	-	-				
	28	✓	✓	✓	-	-				
	29	✓	-	-	-	-				
4	30	✓	✓	✓	✓	=				
	31	N	-	-	-	-				
5	32	✓	✓	✓	✓	=				
13	33	✓	✓	✓	O	=				
14	34	✓	✓	✓	O	=				
	35	✓	-	-	-	-				
	36	✓	✓	✓	-	-				
	37	-	-	-	-	-				
	38	-	-	-	-	-				
	39	-	-	-	-	-				
	40	-	-	-	-	-				
6	41	✓	✓	✓	✓	=				
7	42	✓	✓	✓	✓	=				

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	**Art Unit**
	ELLEN C HAMMOND	3773

CLAIM		DATE								
Final	Original	09/14/2022	12/23/2022	03/31/2023	07/28/2023	12/12/2023				
8	43	✓	✓	✓	✓	=				
	44	✓	-	-	-	-				
15	45		✓	✓	✓	=				
	46		✓	✓	-	-				
16	47		✓	✓	✓	=				
17	48		✓	✓	✓	=				
	49		✓	✓	-	-				
9	50			✓	✓	=				
18	51				✓	=				
19	52				✓	=				
20	53				✓	=				
21	54				✓	=				
10	55				✓	=				
11	56				✓	=				
12	57				✓	=				

AFCP 2.0 Decision

Application No.	Applicant(s)	
17/706,873	Moskowitz et al.	
Examiner	**Art Unit**	**AIA (FITF) Status**
ELLEN C HAMMOND	3773	No

This is in response to the After Final Consideration Pilot request filed 22 November 2023.

1. **Improper Request** – The AFCP 2.0 request is improper for the following reason(s) and the after final amendment submitted with the request will be treated under pre-pilot procedure.

   ☐ An AFCP 2.0 request form PTO/SB/434 (or equivalent document) was not submitted.

   ☐ A non-broadening amendment to at least one independent claim was not submitted.

   ☐ The request is not the first proper AFCP 2.0 request submitted in response to the most recent final rejection.

   ☐ Other: _____

2. **Proper Request**

   A. After final amendment submitted with the request will not be treated under AFCP 2.0.
   The after final amendment cannot be reviewed and a search conducted within the guidelines of the pilot program.

   ☐ The after final amendment will be treated under pre-pilot procedure.

   B. Updated search and/or completed additional consideration.
   The examiner performed an updated search and/or completed additional consideration of the after final amendment within the time authorized for the pilot program. The result(s) of the updated search and/or completed additional consideration are:

   ☑ 1. All of the rejections in the most recent final Office action are overcome and a Notice of Allowance is issued herewith.

   ☐ 2. The after final amendment would not overcome all of the rejections in the most recent final Office action . See attached interview summary for further details.

   ☐ 3. The after final amendment was reviewed, and it raises a new issue(s). See attached interview summary for further details.

   ☐ 4. The after final amendment raises new issues, but would overcome all of the rejections in the most recent final Office action. A decision on determining allowability could not be made within the guidelines of the pilot. See attached interview summary for further details, including any newly discovered prior art.

   ☐ 5. Other: _____

   Examiner Note: Please attach an interview summary when necessary as described above.

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

CPC						
Symbol					Type	Version
A61F	/	2	/	4611	F	2013-01-01
A61B	/	17	/	0642	I	2013-01-01
A61B	/	17	/	7064	I	2013-01-01
A61B	/	17	/	809	I	2013-01-01
A61B	/	17	/	8894	I	2013-01-01
A61F	/	2	/	4465	I	2013-01-01
A61F	/	2	/	447	I	2013-01-01
A61B	/	17	/	8875	I	2013-01-01
A61B	/	17	/	8635	I	2013-01-01
A61B	/	17	/	92	I	2013-01-01
A61B	/	2017	/	00407	A	2013-01-01
A61F	/	2002	/	4687	A	2013-01-01
A61B	/	17	/	86	A	2013-01-01
A61B	/	2017	/	0641	A	2013-01-01
A61B	/	2017	/	0648	A	2013-01-01
A61B	/	2017	/	922	A	2013-01-01
A61F	/	2002	/	2835	A	2013-01-01
A61F	/	2002	/	30133	A	2013-01-01
A61F	/	2002	/	30387	A	2013-01-01
A61F	/	2002	/	30448	A	2013-01-01
A61F	/	2002	/	30507	A	2013-01-01
A61F	/	2002	/	3055	A	2013-01-01
A61F	/	2002	/	30579	A	2013-01-01
A61F	/	2002	/	30604	A	2013-01-01
A61F	/	2002	/	30772	A	2013-01-01
A61F	/	2002	/	30878	A	2013-01-01
A61F	/	2002	/	448	A	2013-01-01
A61F	/	2002	/	4627	A	2013-01-01
A61F	/	2002	/	4681	A	2013-01-01
A61F	/	2220	/	0025	A	2013-01-01
A61F	/	2220	/	005	A	2013-01-01

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	21	
/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	12 December 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2C

U.S. Patent and Trademark Office

Part of Paper No.: 20231212

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

CPC								
Symbol							Type	Version
A61F	/	2230	/	0015			A	2013-01-01
A61F	/	2250	/	0007			A	2013-01-01
A61B	/	17	/	0644			A	2013-01-01
A61B	/	17	/	1757			A	2013-01-01
A61F	/	2002	/	30593			A	2013-01-01
A61F	/	2002	/	30879			A	2013-01-01
A61F	/	2002	/	30904			A	2013-01-01

CPC Combination Sets								
Symbol					Type	Set	Ranking	Version
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	21	
/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	12 December 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2C

U.S. Patent and Trademark Office — Part of Paper No.: 20231212

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

INTERNATIONAL CLASSIFICATION					
CLAIMED					
A61F2/44	/	2	/	44	

NON-CLAIMED					
	/		/		

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	21	
/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	12 December 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2C

U.S. Patent and Trademark Office

Part of Paper No.: 20231212

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/706,873	Moskowitz et al.
	Examiner	Art Unit
	ELLEN C HAMMOND	3773

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		10		19		28		37		46	10	55		
	2		11		20		29		38	16	47	11	56		
	3		12	1	21	4	30		39	17	48	12	57		
	4		13		22		31		40		49				
	5		14	2	23	5	32	6	41	9	50				
	6		15	3	24	13	33	7	42	18	51				
	7		16		25	14	34	8	43	19	52				
	8		17		26		35		44	20	53				
	9		18		27		36	15	45	21	54				

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	21	
/ELLEN C HAMMOND/ Primary Examiner, Art Unit 3773	12 December 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2C

U.S. Patent and Trademark Office Part of Paper No.: 20231212

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	:	Ahmnon D. Moskowitz	Art Unit	:	3773
Application No.	:	17/706,873	Examiner	:	Ellen Christina Hammond
Filed	:	March 29, 2022			
			Conf. No.	:	1103
Title	:	INTERVERTEBRAL IMPLANT AND TOOL ASSEMBLY			

MAIL STOP AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY TO ACTION OF AUGUST 3, 2023

Please consider the following reply.

OK TO ENTER: /E.C.H/

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L104	675	a61f2/447,4455.cpc. AND @pd>="20230728"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/12/12 12:43 PM
L105	59	a61f2002/448.cpc. AND @pd>="20230728"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/12/12 12:49 PM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N12	0	((intervertebral OR spinal OR vertebral OR fusion) AND wall AND perpendicluar AND sidewall AND opening AND indentation AND screw).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/12/12 12:51 PM

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/706,873	03/29/2022	3773	870	46440-0009017	20	3

CONFIRMATION NO. 1103

REPLACEMENT FILING RECEIPT

26191
FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

OC00000006647846

Date Mailed: 01/02/2024

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Ahmnon D. Moskowitz, Rockville, MD;
Pablo A. Valdivia Y. Alvarado, Cambridge, MA;
Mosheh T. Moskowitz, Rockville, MD;
Nathan C. Moskowitz, Rockville, MD;

Applicant(s)

Moskowitz Family LLC, Rockville, MD;

Power of Attorney: The patent practitioners associated with Customer Number 26191

Domestic Priority data as claimed by applicant

This application is a CON of 16/744,755 01/16/2020 PAT 11,376,136
which is a CON of 15/944,117 04/03/2018 PAT 10,537,442
which is a CON of 15/894,471 02/12/2018 PAT 10,390,969
which is a CON of 13/210,157 08/15/2011 PAT 9,889,022
which is a CON of 13/084,543 04/11/2011 PAT 8,353,913
and is a CON of 13/108,982 05/16/2011 PAT 9,005,293
and said 13/084,543 04/11/2011 is a CON of 11/842,855 08/21/2007 PAT 7,942,903
and said 13/108,982 05/16/2011 is a CON of 11/842,855 08/21/2007 PAT 7,942,903
which is a CIP of 11/536,815 09/29/2006 PAT 7,846,188 *
which is a CIP of 11/208,644 08/23/2005 PAT 7,704,279
which claims benefit of 60/670,231 04/12/2005

(*) Data provided by applicant is not consistent with PTO records.

Foreign Applications for which priority is claimed (You may be eligible to benefit from the Patent Prosecution Highway program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/01/2022

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/706,873**

Projected Publication Date: 07/14/2022

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

INTERVERTEBRAL IMPLANT AND TOOL ASSEMBLY

Preliminary Class

623

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	:	Ahmnon D. Moskowitz	Art Unit	:	3773
			Examiner	:	Ellen Christina Hammond
Application No.	:	17/706,873			
Filed	:	March 29, 2022	Confirmation No.	:	1103
			Notice of Allowance Date: 12/28/2023		
Title	:	INTERVERTEBRAL IMPLANT AND TOOL ASSEMBLY			

MAIL STOP ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AFTER ALLOWANCE
PURSUANT TO 37 C.F.R. § 1.312

Please amend the application as indicated on the following pages. This amendment is being filed concurrently with the payment of the issue fee.

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1-20. (Cancelled).

21. (Currently Amended) An intervertebral implant comprising:

a top wall including a top surface, a first side surface perpendicular to the top surface, a second side surface opposite of the first side surface, and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure and define an open space capable of receiving bone filling for biological bone fusion;

a circular opening extending normally into the top surface of the top wall;

an indentation extending into the top surface of the top wall at an intersection between the top surface of the top wall and the first side surface of the top wall, wherein the indentation has first and second straight edges when viewed from a direction normal to the top surface of the top wall, and wherein the first straight edge of the indentation is perpendicular to the second straight edge of the indentation; and

an internal screw hole defined by the intervertebral implant and extending from an entry opening formed in the top wall to an exit opening formed at least partially in the bottom surface of the top wall and at least partially in one of the first and second side surfaces of the top wall;

wherein the intervertebral implant does not include a faceplate to retain [[the]] a screw in the internal screw hole.

22. (Cancelled).

23. (Currently Amended) The intervertebral implant of claim 21, wherein the exit opening of the internal screw hole is configured such that the screw ~~body~~ extending through the internal screw hole exits at the exit opening at least partially into the open space.

24. (Previously Presented) The intervertebral implant of claim 23, wherein the intervertebral implant is configured to be inserted into a disc space between a first vertebral body and a second vertebral body and to provide fusion of the first vertebral body to the second vertebral body via biological bone fusion and screw fusion.

25. (Cancelled).

26. (Cancelled).

27. (Cancelled).

28. (Cancelled).

29. (Cancelled).

30. (Previously Presented) The intervertebral implant of claim 21, wherein the internal screw hole is a first internal screw hole, and the intervertebral implant further comprises:

at least a second internal screw hole extending from a second entry opening formed in the top wall to a second exit opening, the second internal screw hole oriented in a different direction than the first internal screw hole.

31. (Cancelled).

32. (Previously Presented) The intervertebral implant of claim 21, further comprising:

a first outer indentation on a first outer side surface of the first sidewall;

a second outer indentation on a second outer side surface of the second sidewall, wherein the second outer indentation is positioned opposite of the first outer indentation, wherein an entirety of the first outer indentation is positioned closer to the top surface of the top wall than to a bottom of the bottom wall, and an entirety of the second outer indentation is positioned closer to the top surface of the top wall than to the bottom of the bottom wall.

33. (Previously Presented) An implant system comprising:

an intervertebral implant comprising:

a top wall including a top surface and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall having a first outer side surface;

a second sidewall having a second outer side surface positioned opposite the first outer side surface of the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure and define an open space capable of receiving bone filling for biological bone fusion, and wherein the first sidewall and the second sidewall define apertures from their respective first and second outer side surfaces to respective first and second inner side surfaces, the apertures connected to the open space and configured to promote biological bone fusion through the first sidewall and the second sidewall; and

a first internal screw hole defined by the intervertebral implant and extending from a first entry opening formed in the top wall to a first exit opening formed at least partially in the bottom surface of the top wall and at least partially in a first side surface of the top wall;

a second internal screw hole defined by the intervertebral implant and extending from a second entry opening formed in the top wall to a second exit opening formed at least partially in the bottom surface of the top wall and at least partially in a second side surface of the top wall;

the intervertebral implant including a plurality of surface features on the first and second side surfaces of the top wall and also on first and second side surfaces of the bottom wall, wherein the surface features are on at least middle portions of the first and second side surfaces of the top wall and first and second side surfaces of the bottom wall;

the intervertebral implant including a first indentation on the first outer side surface of the first sidewall of the intervertebral implant and a second indentation on the second outer side surface of the second sidewall of the intervertebral implant, the first indentation having a first bottom boundary positioned closer to the top surface of the top wall than to a bottom of the bottom wall such that an entirety of the first indentation is positioned closer to the top surface of the top wall than to the bottom of the bottom wall, and the second indentation having a second bottom boundary positioned closer to the top surface of the top wall than to the bottom of the bottom wall such that an entirety of the second indentation is positioned closer to the top surface of the top wall than to the bottom of the bottom wall; and

a tool comprising:

an elongate shaft having a first end and a second end; and

a gripper at the first end of the elongate shaft, the gripper comprising a first prong and a second prong,

wherein the first prong and the second prong are capable of respectively engaging the first indentation and the second indentation of the intervertebral implant.

34. (Previously Presented) The implant system of claim 33, wherein the second internal screw hole is configured to orient a screw in a different direction than the first internal screw hole, the implant system further comprising:

a first screw disposed in the first internal screw hole and at least partially within the intervertebral implant; and

a second screw disposed in the second internal screw hole and at least partially within the intervertebral implant; wherein each of the first internal screw hole and second internal screw hole is angled to bi-directionally orient the first screw and the second screw in opposite directions.

35-40. (Cancelled).

41. (Currently Amended) The intervertebral implant of claim 21, wherein at least one of the first and second side surfaces of the top wall and a side surface of the bottom wall are each patterned with a plurality of surface features to create a rough side surface ~~of the intervertebral cage~~.

42. (Previously Presented) The intervertebral implant of claim 41, wherein at least some of the plurality of surface features are positioned on at least one of the first and second side surfaces of the top wall closer to the top surface of the top wall than the exit opening.

43. (Previously Presented) The intervertebral implant of claim 42, wherein the plurality of surface features are ridges extending from at least one of the first and second side surfaces of the top wall and the side surface of the bottom wall, the ridges positioned around the open space capable of receiving bone filling for biological bone fusion.

44. (Cancelled).

45. (Previously Presented) An intervertebral implant system comprising:

a top wall including a top surface, a first side surface perpendicular to the top surface, a second side surface opposite of the first side surface, and a bottom surface opposite the top surface;

a bottom wall opposite the top wall;

a first sidewall;

a second sidewall opposite the first sidewall, wherein the top wall, bottom wall, first sidewall and second sidewall comprise a unitary structure and define an open space capable of receiving bone filling for biological bone fusion;

a circular opening extending normally into the top surface of the top wall;

an indentation extending into the top surface of the top wall at an intersection between the top surface of the top wall and the first side surface of the top wall;

a first internal screw hole extending from a first entry opening formed in the top wall to a first exit opening formed at least partially in the bottom surface of the top wall and at least partially in the first side surface of the top wall; and a second internal screw hole extending from a second entry opening formed in the top wall to a second exit opening formed at least partially in the bottom surface of the top wall and at least partially in the second side surface of the top wall.

46. (Cancelled).

47. (Previously Presented) The intervertebral implant system of claim 45, wherein the circular opening is formed in the indentation.

48. (Currently Amended) The intervertebral implant system of claim 45, wherein the intervertebral implant system does not include a faceplate to retain [[the]] a screw ~~head~~ in the first or the second internal screw hole ~~guide~~.

49. (Cancelled).

50. (Currently Amended) The intervertebral implant of claim 21, wherein the entry opening ~~comprising n~~ is formed only in the top surface of the top wall.

51. (Previously Presented) The intervertebral implant system of claim 45, wherein the indentation has first and second straight edges when view from a direction normal to the top surface of the top wall, and wherein the first straight edge of the indentation is perpendicular to the second straight edge of the indentation.

52. (Previously Presented) The intervertebral implant system of claim 45, and further comprising:

means to facilitate incorporation of the intervertebral implant system into and fusion with superior and inferior vertebral bodies, wherein the first side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the second side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the means to facilitate incorporation of the intervertebral implant system into and fusion with superior and inferior vertebral bodies is positioned on the first side surface on at least part of each of the top wall, the bottom wall, and the first and second sidewalls, and wherein the means to facilitate incorporation of the intervertebral implant system into and fusion with superior and inferior vertebral bodies is positioned on the second side surface on at least part of each of the top wall, the bottom wall, and the first and second sidewalls.

53. (Previously Presented) The intervertebral implant system of claim 45, wherein the first side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the second side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein a first plurality of ridges are positioned on the first side surface with at least a first portion of the first side surface being substantially ridge-free such that the first plurality of ridges cover more of a left side of the first side surface than a right side of the first side surface, and wherein a second plurality of ridges are positioned on the second side surface with at least a first portion of the first side surface being substantially ridge-free.

54. (Previously Presented) The intervertebral implant system of claim 53, wherein a portion of the first side surface that extends across the bottom wall is substantially ridge-free.

55. (Previously Presented) The intervertebral implant of claim 21, and further comprising:

means to facilitate incorporation of the intervertebral implant into and fusion with superior and inferior vertebral bodies, wherein the first side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the second side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the means to facilitate incorporation of the intervertebral implant into and fusion with superior and inferior vertebral bodies is positioned on the first side surface on at least part of each of the top wall, the bottom wall, and the first and second sidewalls, and wherein the means to facilitate incorporation of the intervertebral implant into and fusion with superior and inferior vertebral bodies is positioned on the second side surface on at least part of each of the top wall, the bottom wall, and the first and second sidewalls.

56. (Previously Presented) The intervertebral implant of claim 55, wherein a portion of the first side surface that extends across the bottom wall is substantially ridge-free.

57. (Previously Presented) The intervertebral implant of claim 21, wherein the first side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein the second side surface extends across each of the top wall, the bottom wall, and the first and second sidewalls, wherein a first plurality of ridges are positioned on the first side surface with at least a first portion of the first side surface being substantially ridge-free such that the first plurality of ridges cover more of a left side of the first side surface than a right side of the first side surface, and wherein a second plurality of ridges are positioned on the second side surface with at least a first portion of the first side surface being substantially ridge-free.

REMARKS

Applicant respectfully requests entry of the amendments to claims 21, 23, 41, 48, and 50, which are amended to correct minor informalities including antecedent basis. The amendments are fully supported by the specification and drawings, and no new matter is added.

The amendment addresses formal matters in the claims without altering the scope of the allowed claims. Accordingly, no additional search is required by the amendment.

Applicant believes no fees are due with this submission. However, if Applicant is incorrect, please apply any necessary charges or credits to Deposit Account 06-1050, referencing the above attorney docket number.

Respectfully submitted,

Date: January 8, 2024 /Kiersten M. Batzli/
Kiersten M. Batzli, Reg. No. 75,476

Customer Number 26191
Fish & Richardson P.C.
Telephone: +1 (612) 766-2015
Facsimile: (877) 769-7945

101009408.doc

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	:	Ahmnon D. Moskowitz	Art Unit	:	3773
			Examiner	:	Ellen Christina Hammond
Application No.	:	17/706,873			
Filed	:	March 29, 2022	Confirmation No.	:	1103
			Notice of Allowance Date: December 28, 2023		
Title	:	INTERVERTEBRAL IMPLANT AND TOOL ASSEMBLY			

MAIL STOP ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY TO NOTICE OF ALLOWANCE

In response to the Notice of Allowance dated December 28, 2023, enclosed is a completed Part B - Fee(s) Transmittal.

The issue fee is being paid with this reply on the USPTO patent electronic filing system. Apply that fee and any other necessary charges or credits to Deposit Account 06-1050, referencing the above attorney docket number.

COMMENTS ON EXAMINER'S REASONS FOR ALLOWANCE

It is recognized that, in accordance with M.P.E.P. § 1302.14, the Examiner's reasons for allowance need not set forth all of the details as to why the claims are allowed. In the above-referenced application, it is not conceded that the Examiner's stated reasons for allowance are the only reasons for which the claims are allowable. The Examiner's reasons for allowance indicate that particular claim elements are not disclosed or suggested by the prior art of record, yet the claims may be patentable for other reasons as well, including the inventive combination of all of the recited claim elements. It is not conceded that the specific limitations identified by the Examiner are necessary to distinguish the art of record or to satisfy the requirements of 35 U.S.C. § 112. Moreover, the Examiner does not assert, and it would not be conceded, that the Examiner's reasons have any bearing on the patentability of claims in any other applications directed to the disclosed subject matter.

In addition, each dependent claim stands on its own and may be allowable on its own merits. In particular, each dependent claim may be allowable on the basis of a combination of some of the features recited in the dependent claim and its base claim(s), which combination of features may not include all of the limitations identified in the Examiner's reasons for allowance.

Respectfully submitted,

Date: January 8, 2024

/Kiersten M. Batzli/
Kiersten M. Batzli, Reg. No. 75,476

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Fish & Richardson P.C.
Telephone: +1 (612) 766-2015
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101009315.doc

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via the USPTO patent electronic filing system.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
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Alexandria, Virginia 22314-1450

By fax, send to: (571) 273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

26191 7590 12/28/2023

FISH & RICHARDSON P.C.
P.O. BOX 1022
MINNEAPOLIS, MN 55440-1022

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via the USPTO patent electronic filing system or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

TITLE OF INVENTION: INTERVERTEBRAL IMPLANT AND TOOL ASSEMBLY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0		$480	03/28/2024

EXAMINER	ART UNIT	CLASS-SUBCLASS
HAMMOND, ELLEN CHRISTINA	3773	623-017160

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

[ ] Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

[ ] "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Fish & Richardson P.C.
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Moskowitz Family LLC

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Rockville, MD

Please check the appropriate assignee category or categories (will not be printed on the patent): [ ] Individual [X] Corporation or other private group entity [ ] Government

4a. Fees Submitted: [X] Issue Fee [ ] Publication Fee (if required)

4b. Method of Payment (*Please first reapply any previously paid fee shown above*):

[X] Electronic Payment via the USPTO patent electronic filing system [ ] Enclosed check [ ] Non-electronic payment by credit card (Attach form PTO-2038)

[X] The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account No. 06-1050

5. **Change of Entity Status** (from status indicated above)

[ ] Applicant certifying micro entity status. See 37 CFR 1.29 — **NOTE**: Absent a valid Certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

[ ] Applicant asserting small entity status. See 37 CFR 1.27. — **NOTE**: If the application was previously under micro entity status, checking this box will be taken as a notification of loss of entitlement to micro entity status.

[ ] Applicant changing to regular undiscounted fee status. — **NOTE**: Checking this box will be taken as a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Kiersten M. Batzli/ Date January 8, 2024

Typed or printed name Kiersten M. Batzli Registration No. 75,476

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/706,873	01/08/2024 05:01:23 PM Z ET	46440-0009017

Title of Invention

INTERVERTEBRAL IMPLANT AND TOOL ASSEMBLY

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1103	FILED BY	Emily Whitcomb
PATENT CENTER #	63877137	AUTHORIZED BY	Kiersten Batzli
CUSTOMER #	26191	FILING DATE	03/29/2022
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Ahmnon D. Moskowitz

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
DA / 061050	E202418H02226526	Emily Whitcomb

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
2501	UTILITY ISSUE FEE	480.00	1	480.00
			TOTAL AMOUNT:	$480.00

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage

submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES
PATENT AND TRADEMARK OFFICE

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Alexandria, VA 22313 - 1450
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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/706,873	**01/08/2024 05:01:23 PM Z ET**	**46440-0009017**

Title of Invention

INTERVERTEBRAL IMPLANT AND TOOL ASSEMBLY

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	1103	FILED BY	Emily Whitcomb
PATENT CENTER #	63877137	FILING DATE	03/29/2022
CUSTOMER #	26191	FIRST NAMED INVENTOR	Ahmnon D. Moskowitz
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Kiersten Batzli

Documents

TOTAL DOCUMENTS: 5

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
Amend312.pdf		10	-	108 KB
Amend312-A.NA.pdf	(1-1)	1	Amendment after Notice of Allowance (Rule 312)	52 KB
Amend312-CLM.pdf	(2-9)	8	Claims	91 KB
Amend312-REM.pdf	(10-10)	1	Applicant Arguments/Remarks Made in an Amendment	42 KB
ReplytoNOA.pdf		2	Issue Fee Payment (PTO-85B)	59 KB
IssueFee.pdf		1	Issue Fee Payment (PTO-85B)	131 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
Amend312.pdf	E921FAEC5A44158374541AC8BF7CCDE57FEED977D4C3C2400C4963C498342CE58E851AB202369CCBD766FD17F4D33AF4FF02C1E856511BD9DBB33545EA0A4188
Amend312-A.NA.pdf	65A13E56AF374373634CE71C9693FA8D91AA7363D416CDE87E607D9BFE2635891D9BB12BB981BF7CC08AC230823E50E911539836D77CE44500FCAEFE1B06911A
Amend312-CLM.pdf	DA15965DC770E4C6F82A8B186EB7E89573F5DCFF7BFB596655115C5485A70F969F9E24B07144D362867E7E8DE04BEFD926C42E549BB92825ED2B0B9AE0A0D291
Amend312-REM.pdf	02E71B93A2BBF42CCDFD0DF6DA688615A7DF19499D9ADACD797036BE103B44C2080CD347C5E4245ACB462B300D60B4A83BA6C0C13F0753C97D0B4BB391DCC107
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IssueFee.pdf	4B839D99A2D9A53F13F188B70E983FF2E3D690E776B8C8E680464908A6618249C2A86E1C4D5B00F8521112424CB0825FEFB0EAD0B5549B60F78B107FD6FA8476

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National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

26191 7590 01/19/2024

FISH & RICHARDSON P.C. (TC)
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
HAMMOND, ELLEN CHRISTINA	

ART UNIT	PAPER NUMBER
3773	

NOTIFICATION DATE	DELIVERY MODE
01/19/2024	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Corrected ***Notice of Allowability***	**Application No.** 17/706,873	**Applicant(s)** Moskowitz et al.	
	Examiner ELLEN C HAMMOND	**Art Unit** 3773	**AIA (FITF) Status** No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to the amendment filed 01/08/2024.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are See Continuation Sheet . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☑ Other PTO-271.

/ELLEN C HAMMOND/
Primary Examiner, Art Unit 3773

Continuation of 3. The allowed claim(s) is/are: 21,23-24,30,32-34,41-43,45,47-48 and 50-57

Response to Rule 312 Communication	Application No.	Applicant(s)	
	17/706,873	Moskowitz et al.	
	Examiner	Art Unit	AIA (FITF) Status
	ELLEN C HAMMOND	3773	No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☑ The amendment filed on 08 January 2024 under 37 CFR 1.312 has been considered, and has been:

a) ☑ entered.

b) ☐ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.

Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

f) ☐ not entered because the supplemental or corrected Application Data sheet (ADS)

☐ was not accompanied by a petition to accept an unintentionally delayed claim under 37 CFR 1.55 or 27 CFR 1.78;

☐ did not identify the information being changed in accordance with 37 CFR 1.76(c)(2);

☐ was not properly signed in accordance with 37 CFR 1.76(e) (or 37 CFR 1.33(b) for applications filed prior to September 16, 2012).

/ELLEN C HAMMOND/
Primary Examiner, Art Unit 3773

OK TO ENTER: /E.C.H/

Attorney's Docket No.: 46440-0009017

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor	:	Ahmnon D. Moskowitz	Art Unit	:	3773
			Examiner	:	Ellen Christina Hammond
Application No.	:	17/706,873			
Filed	:	March 29, 2022	Confirmation No.	:	1103
			Notice of Allowance Date: 12/28/2023		
Title	:	INTERVERTEBRAL IMPLANT AND TOOL ASSEMBLY			

MAIL STOP ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AFTER ALLOWANCE
PURSUANT TO 37 C.F.R. § 1.312

Please amend the application as indicated on the following pages. This amendment is being filed concurrently with the payment of the issue fee.

OK TO ENTER: /E.C.H/

Substitute Disclosure Form / U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No.	Application No.
Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))	46440-0009017	17/706,873
	Applicant: Moskowitz Family LLC	
	Filing Date: March 29, 2022	Group Art Unit: Unknown

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Filing Date If Appropriate	Class	Subclass
	28.	5665122	9/9/1997	Kambin			
	29.	5667472	9/7/1997	Finn et al.			
	30.	5713912	2/3/1998	Porter			
	31.	5782832	7/21/1998	Larsen et al.			
	32.	5800550	9/1/1998	Sertich			
	33.	5865848	2/2/1999	Baker			
	34.	5888223	3/30/1999	Bray, Jr.			
	35.	5916224	6/29/1999	Esplin			
	36.	5951574	9/14/1999	Stefanchik et al.			
	37.	5960522	10/5/1999	Boe			
	38.	5968054	10/19/1999	Yeatts et al.			
	39.	5976136	11/2/1999	Bailey et al.			
	40.	6066175	5/23/2000	Henderson et al.			
	41.	6102950	8/15/2000	Vaccaro			
	42.	6120503	9/19/2000	Michelson			
	43.	6126689	10/3/2000	Brett			
	44.	6176882	1/23/2001	Biedermann et al.			
	45.	6179873	1/30/2001	Zientek			
	46.	6224602	5/1/2001	Hayes			
	47.	6235034	5/22/2001	Bray			
	48.	6322562	11/27/2001	Wolter			
	49.	6325805	12/4/2001	Ogilvie			
	50.	6336928	1/8/2002	Guerin et al.			
	51.	6342074	1/29/2002	Simpson			
	52.	6368350	4/9/2002	Erickson et al.			
	53.	6375682	4/23/2002	Fleischmann et al.			
	54.	6419704	7/16/2002	Ferree			

Change(s) applied to document, /P.H./ 1/5/2024

Examiner Signature	Date Considered

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /E.C.H/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	02/20/2024	11903849	46440-0009017	1103

26191 7590 01/31/2024

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ISSUE NOTIFICATION

The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at https://patentcenter.uspto.gov/. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

The USPTO is implementing electronic patent issuance with a transition period, during which period the USPTO will mail a ceremonial paper copy of the electronic patent grant to the correspondence address of record. Additional copies of the patent (i.e., certified and presentation copies) may be ordered for a fee from the USPTO's Certified Copy Center at https://certifiedcopycenter.uspto.gov/index.html. The Certified Copy Center may be reached at (800)972-6382.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Center (https://patentcenter.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional inventors):

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APPLICANT(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional applicants):

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/706,873	03/29/2022	Ahmnon D. Moskowitz	46440-0009017	1103

26191 7590 02/20/2024

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EXAMINER	
HAMMOND, ELLEN CHRISTINA	

ART UNIT	PAPER NUMBER
3773	

NOTIFICATION DATE	DELIVERY MODE
02/20/2024	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

APPLICATION NO.	ISSUE DATE	PATENT NO.
17/706,873	20-Feb-2024	11903849

FISH & RICHARDSON P.C. (TC)
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EGRANT NOTIFICATION

Your electronic patent grant (eGrant) is now available, which can be accessed via Patent Center at https://patentcenter.uspto.gov

The electronic patent grant is the official patent grant under 35 U.S.C. 153. For more information, please visit https://www.uspto.gov/electronicgrants