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Document details: Country/Office: US

Filing date: 19 Dec 2023 (19.12.2023)

Application number: 63/612,133

Date of availability of document: 25 Jan 2024 (25.01.2024)

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THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

December 24, 2024

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE UNDER 35 USC 111.

APPLICATION NUMBER: 63/612,133
FILING DATE: *December 19, 2023*

THE COUNTRY CODE AND NUMBER OF YOUR PRIORITY APPLICATION, TO BE USED FOR FILING ABROAD UNDER THE PARIS CONVENTION, IS *US63/612,133*



Certified by

Acting Under Secretary of Commerce
for Intellectual Property and
Acting Director of the United States
Patent and Trademark Office

SCORE Placeholder Sheet for IFW Content

Application Number: 63612133

Document Date: 12/19/2023

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- Drawing

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Provisional Application for Patent Cover Sheet This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c)					
Inventor(s)					
Inventor 1					Remove
Given Name	Middle Name	Family Name	City	State	Country ;
Eric		DEUTSCH	Houston	TX	US
Inventor 2					Remove
Given Name	Middle Name	Family Name	City	State	Country ;
Johnny		HARRIS	Tulsa	OK	US
Inventor 3					Remove
Given Name	Middle Name	Family Name	City	State	Country ;
Nathan		ROSE	Pinehurst	TX	US
All Inventors Must Be Listed – Additional Inventor Information blocks may be generated within this form by selecting the Add button.					Add
Title of Invention		BREAKAWAY LINK FOR A SLIPS LIFTER			
Attorney Docket Number (if applicable)		1187-C-0471-US-P			
Correspondence Address					
Direct all correspondence to (select one):					
☒ The address corresponding to Customer Number			☐ Firm or Individual Name		
Customer Number			155727		

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.	
☒ No.	
☐ Yes, the invention was made by an agency of the United States Government. The U.S. Government agency name is:	
☐ Yes, the invention was under a contract with an agency of the United States Government. The name of the U.S. Government agency and Government contract number are:	

Entity Status

Applicant asserts small entity status under 37 CFR 1.27 or applicant certifies micro entity status under 37 CFR 1.29

- ☐ Applicant asserts small entity status under 37 CFR 1.27
- ☐ Applicant certifies micro entity status under 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent.
- ☒ No

Warning

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

Signature

Please see 37 CFR 1.4(d) for the form of the signature.

Signature	/David A. Pittman/			Date (YYYY-MM-DD)	2023-12-19
First Name	David A.	Last Name	Pittman	Registration Number (If appropriate)	66027

This collection of information is required by 37 CFR 1.51. 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 8 hours 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. **This form can only be used when in conjunction with EFS-Web. If this form is mailed to the USPTO, it may cause delays in handling the provisional application.**

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.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	1187-C-0471-US-P
		Application Number	
Title of Invention	BREAKAWAY LINK FOR A SLIPS LIFTER		
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	
	Eric		DEUTSCH		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Houston	State/Province	TX	Country of Residenceⁱ	US
Mailing Address of Inventor:					
Address 1	4621 Ingersoll				
Address 2					
City	Houston	State/Province	TX		
Postal Code	77027	Countryⁱ	US		
Inventor 2					Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Johnny		HARRIS		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Tulsa	State/Province	OK	Country of Residenceⁱ	US
Mailing Address of Inventor:					
Address 1	10624 East 28th Court				
Address 2					
City	Tulsa	State/Province	OK		
Postal Code	74129	Countryⁱ	US		
Inventor 3					Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Nathan		ROSE		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	1187-C-0471-US-P	
		Application Number		
Title of Invention	BREAKAWAY LINK FOR A SLIPS LIFTER			

City	Pinehurst	State/Province	TX	Country of Residence	US
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Mailing Address of Inventor:

Address 1	2111 Rosewood Pines Lane				
Address 2					
City	Pinehurst	State/Province	TX		
Postal Code	77362	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	155727		
Email Address	mail@abel-ip.com	Add Email	Remove Email

Application Information:

Title of the Invention	BREAKAWAY LINK FOR A SLIPS LIFTER		
Attorney Docket Number	1187-C-0471-US-P	Small Entity Status Claimed	☐
Application Type	Provisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	8	Suggested Figure for Publication (if any)	4B

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.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	1187-C-0471-US-P
		Application Number	
Title of Invention	BREAKAWAY LINK FOR A SLIPS LIFTER		

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	155727		

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			Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
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).

Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)	Remove
Additional Foreign Priority Data may be generated within this form by selecting the Add button.				Add

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	1187-C-0471-US-P
		Application Number	
Title of Invention	BREAKAWAY LINK FOR A SLIPS LIFTER		

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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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	1187-C-0471-US-P
		Application Number	
Title of Invention	BREAKAWAY LINK FOR A SLIPS LIFTER		

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.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	1187-C-0471-US-P
		Application Number	
Title of Invention	BREAKAWAY LINK FOR A SLIPS LIFTER		

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	Nabors Drilling Technologies USA, Inc.		
Mailing Address Information For Applicant:			
Address 1	515 West Greens Road, Suite 1200		
Address 2			
City	Houston	State/Province	TX
Country	US	Postal Code	77067
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.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	1187-C-0471-US-P
		Application Number	
Title of Invention	BREAKAWAY LINK FOR A SLIPS LIFTER		

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	/David A. Pittman/			Date (YYYY-MM-DD)	2023-12-19
First Name	David A.	Last Name	Pittman	Registration Number	66027
Additional Signature may be generated within this form by selecting the Add button. Add					

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	1187-C-0471-US-P
		Application Number	
Title of Invention	BREAKAWAY LINK FOR A SLIPS LIFTER		

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 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 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.

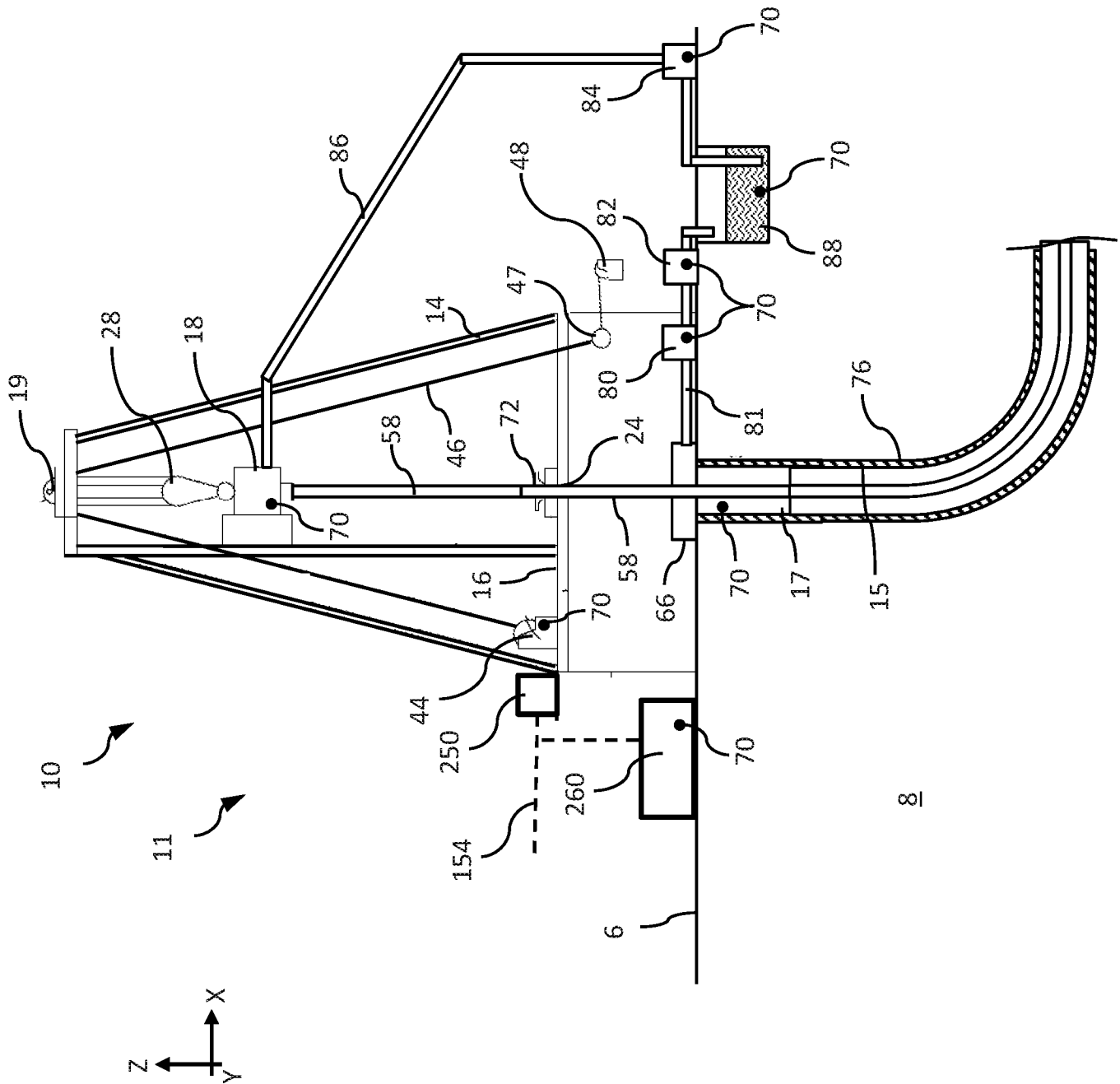


FIG. 1

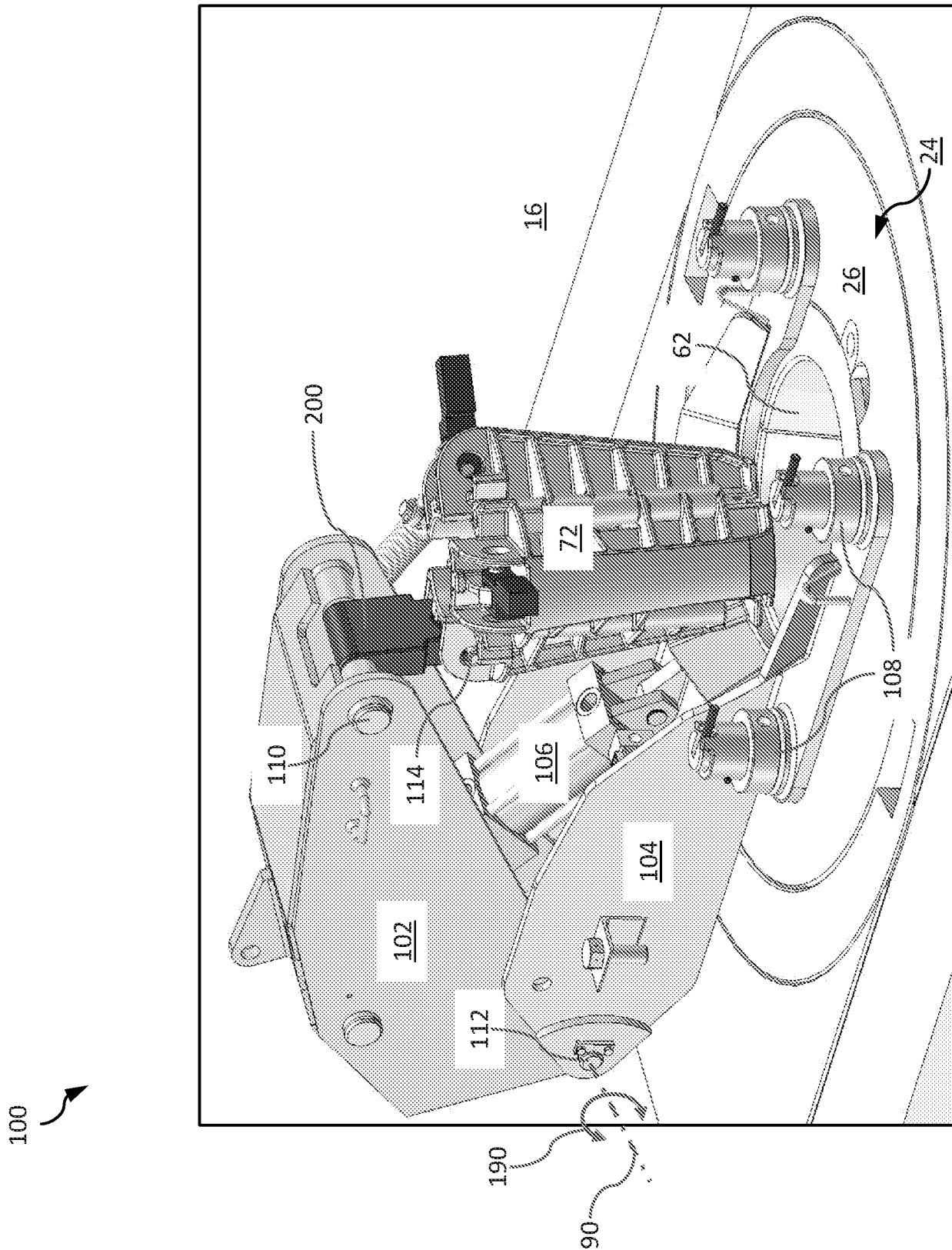


FIG. 2A

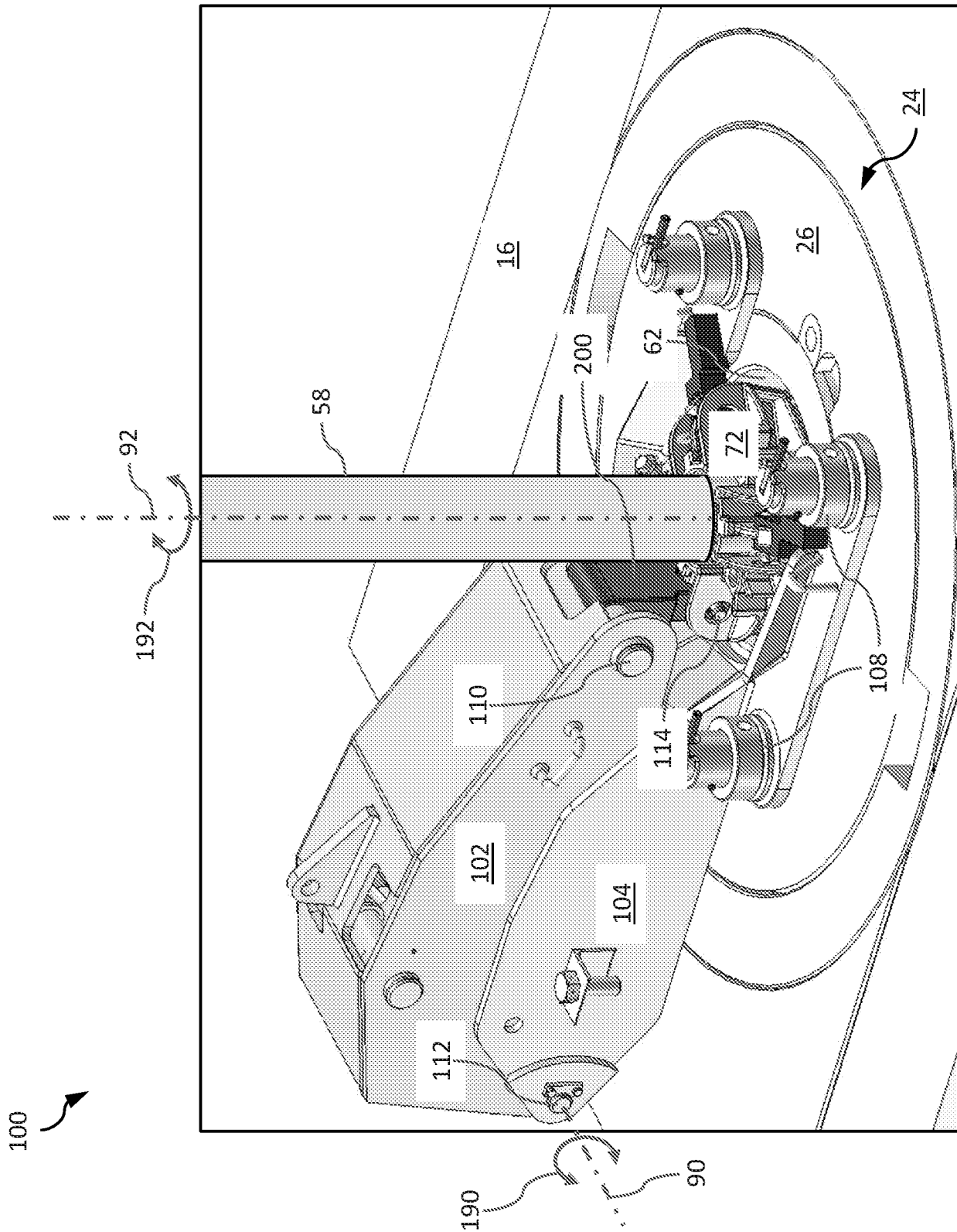
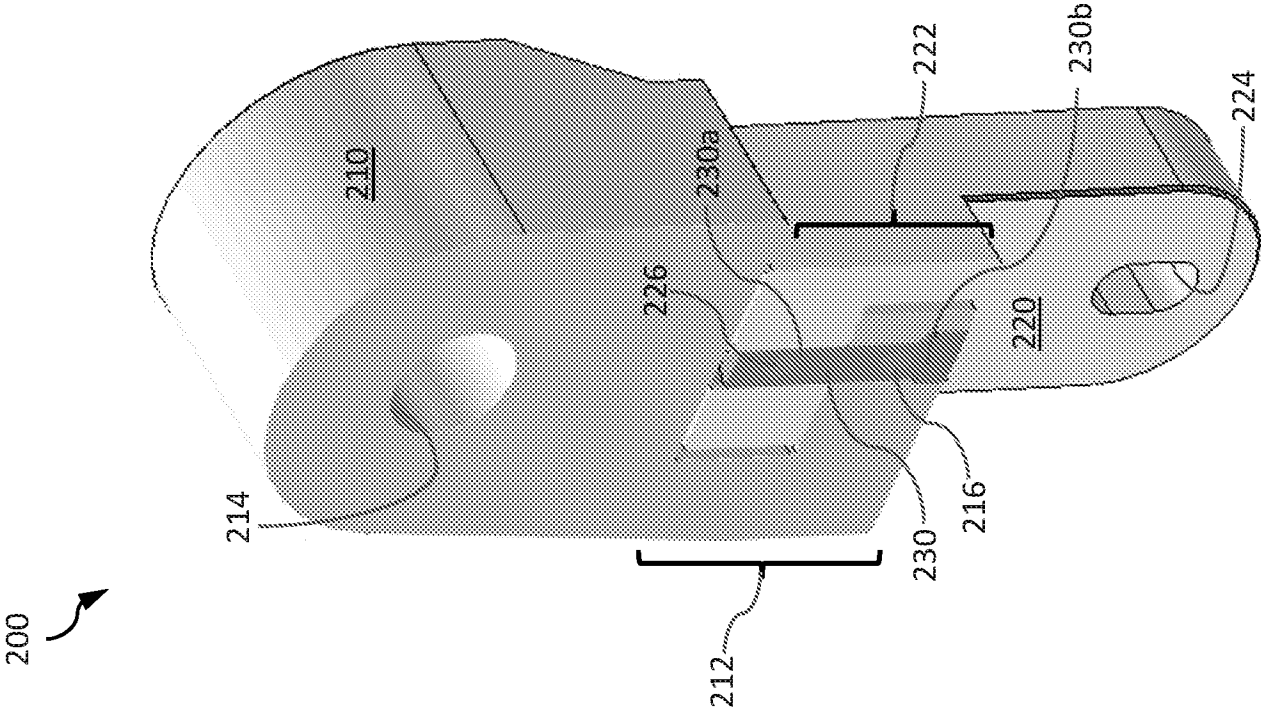


FIG. 2B



Cross-sectional line 3B-3B

FIG. 3B

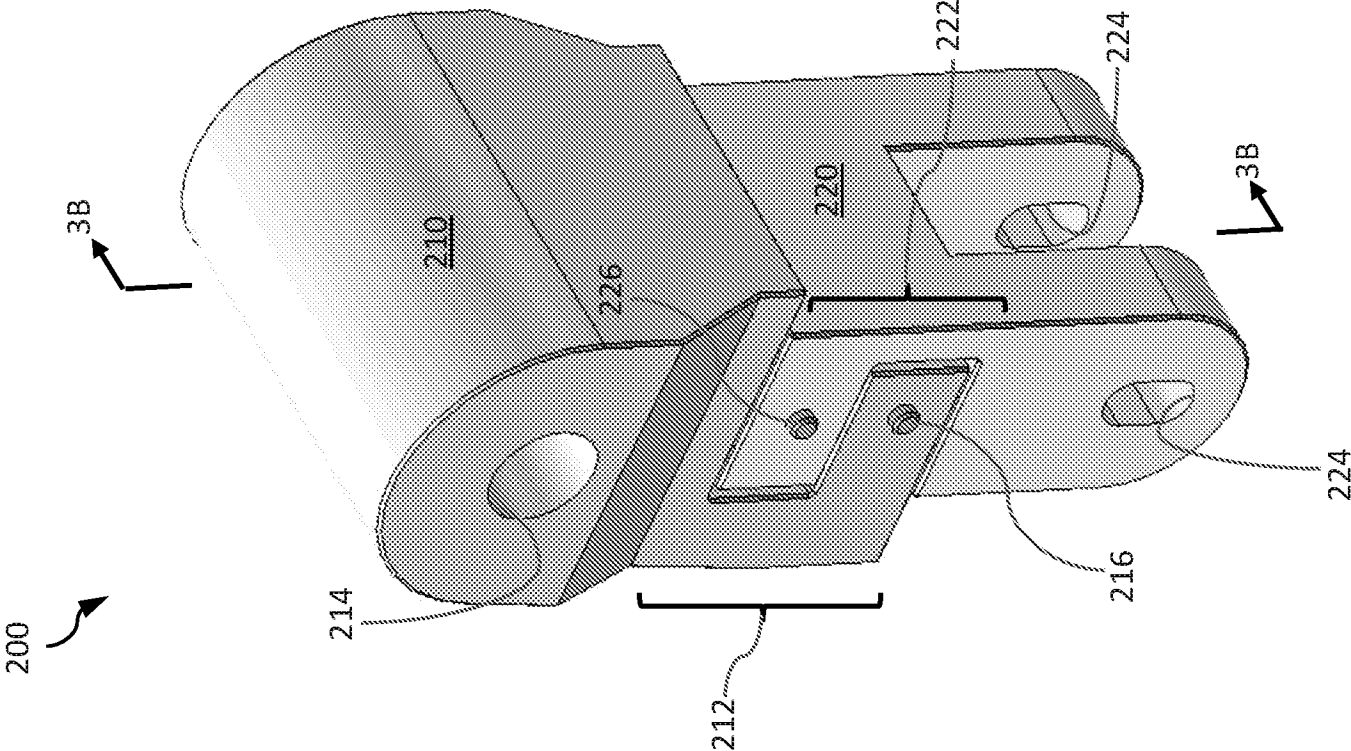
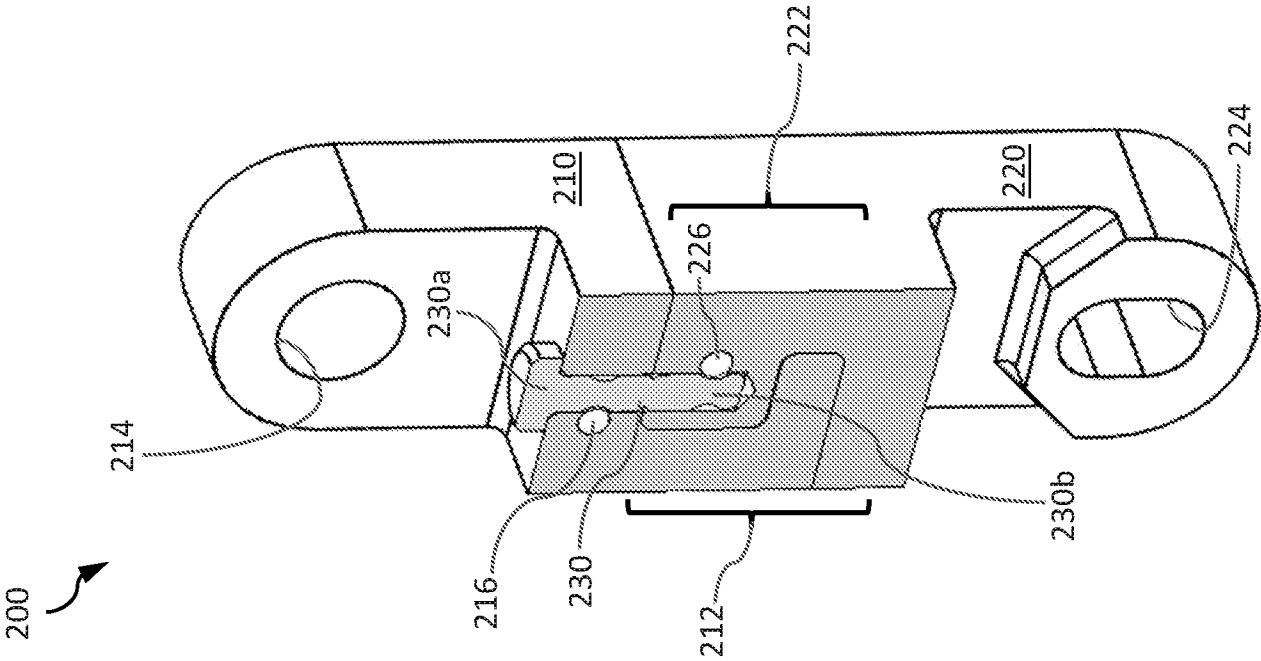


FIG. 3A



Cross-sectional line 4B-4B

FIG. 4B

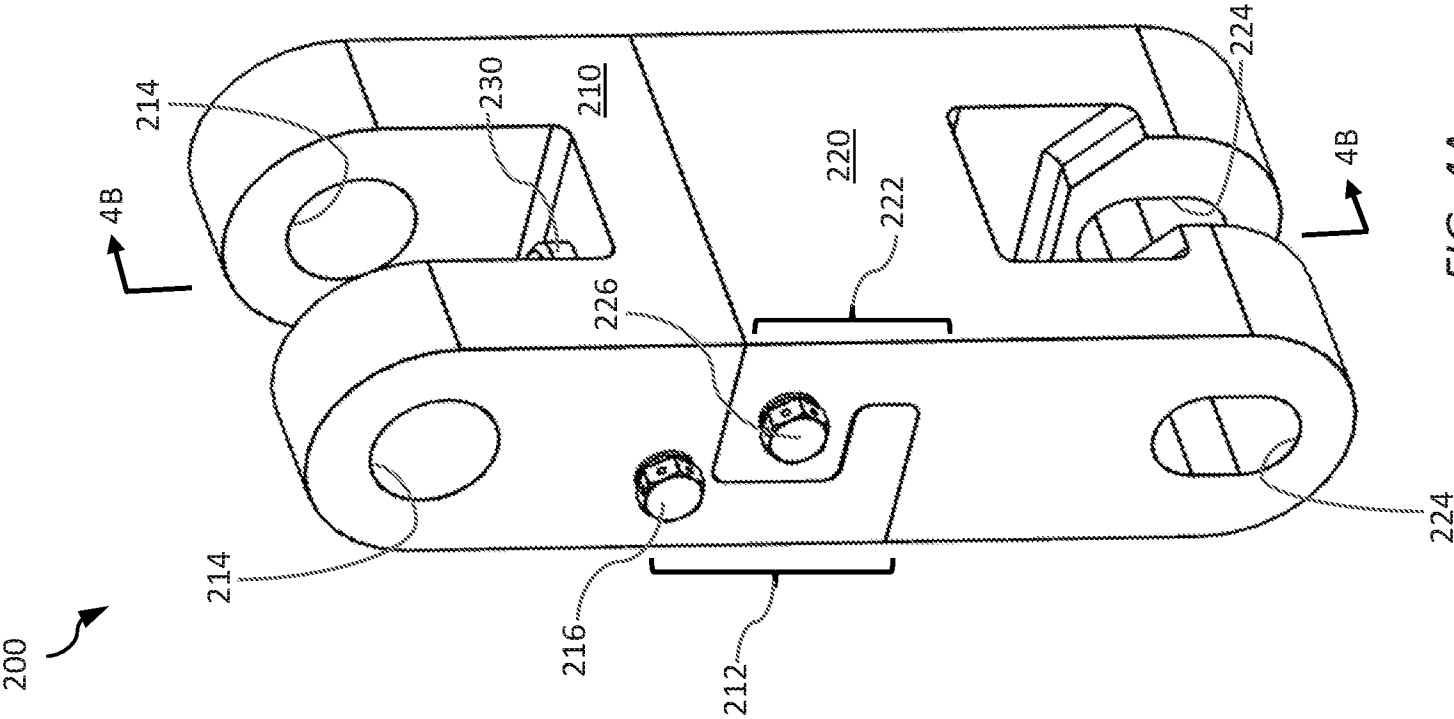
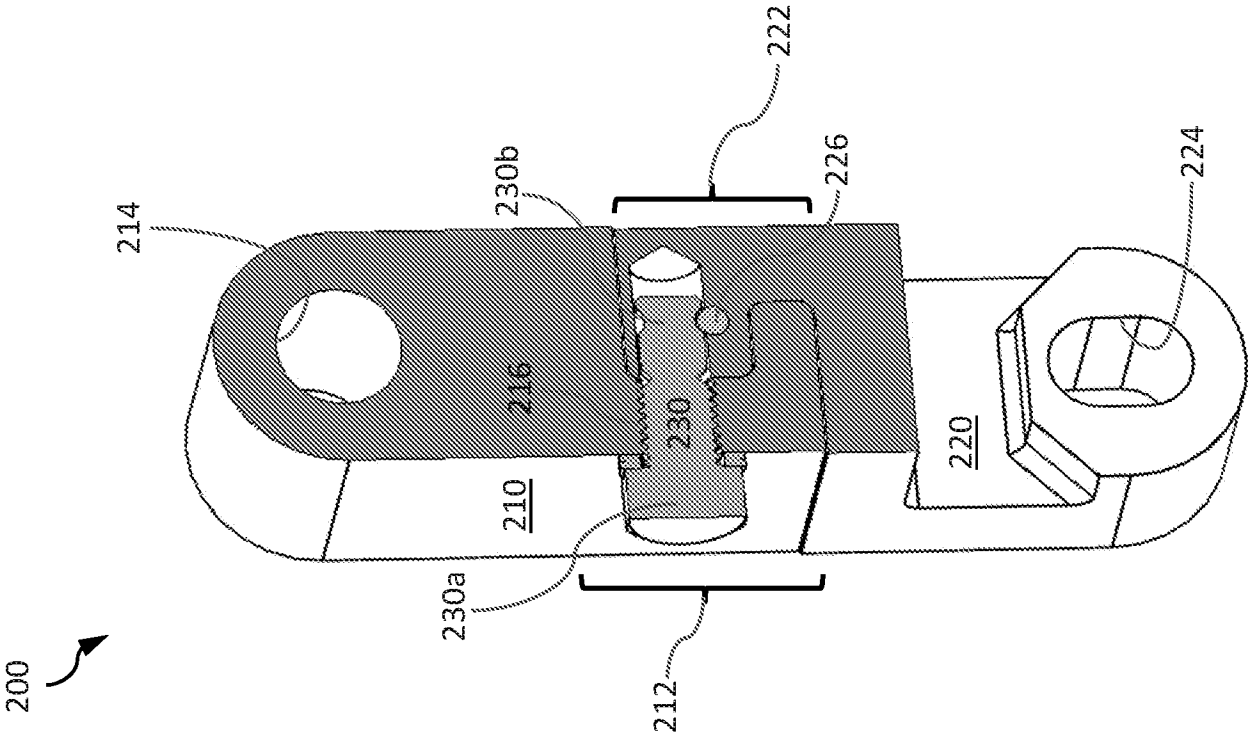


FIG. 4A



Cross-sectional line 5B-5B

FIG. 5B

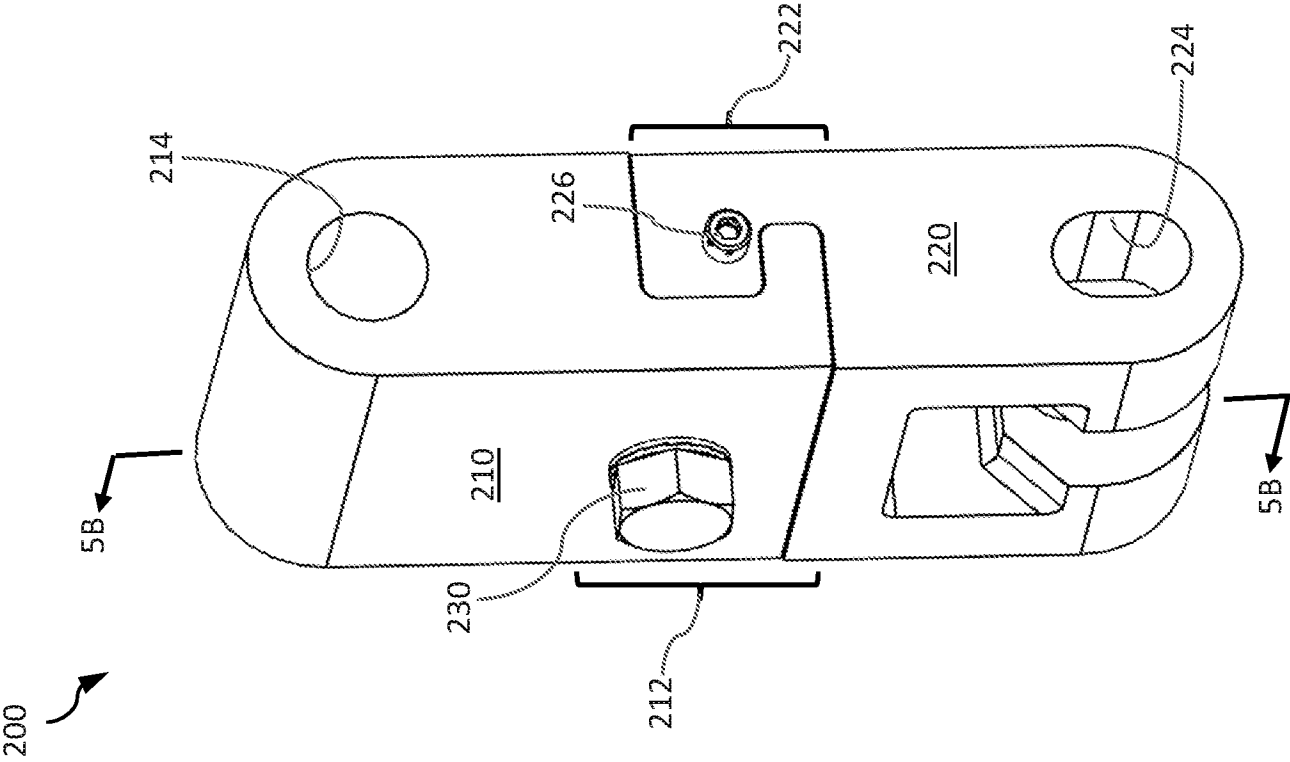


FIG. 5A

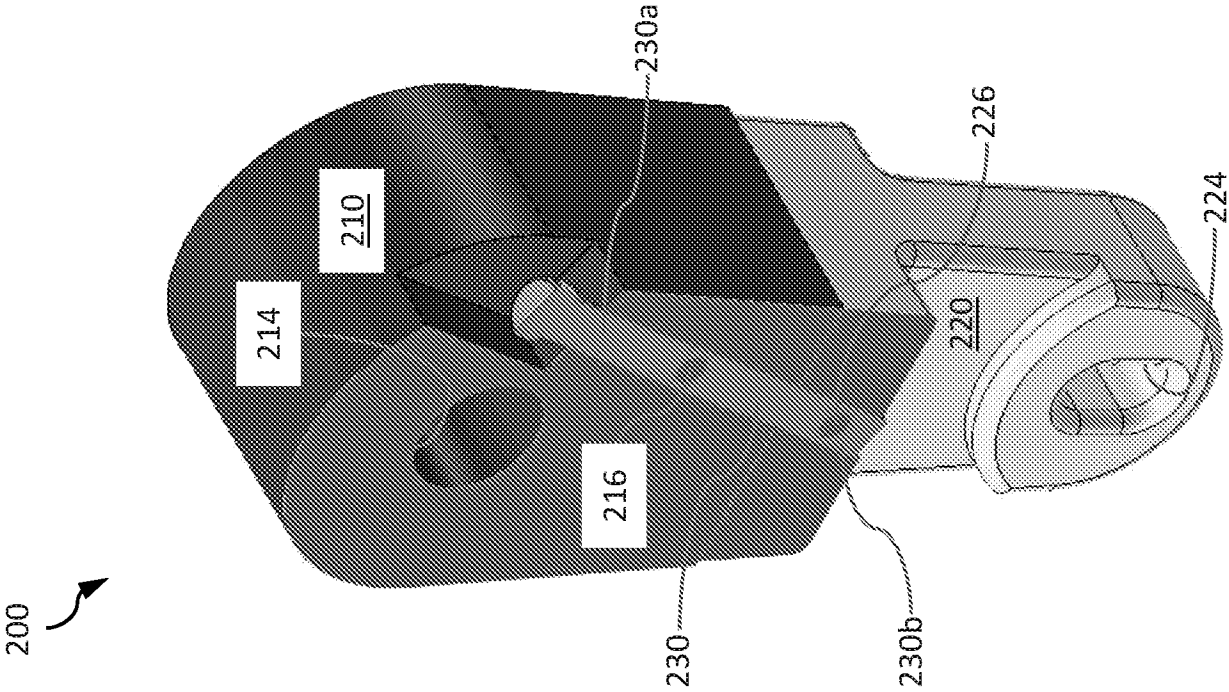
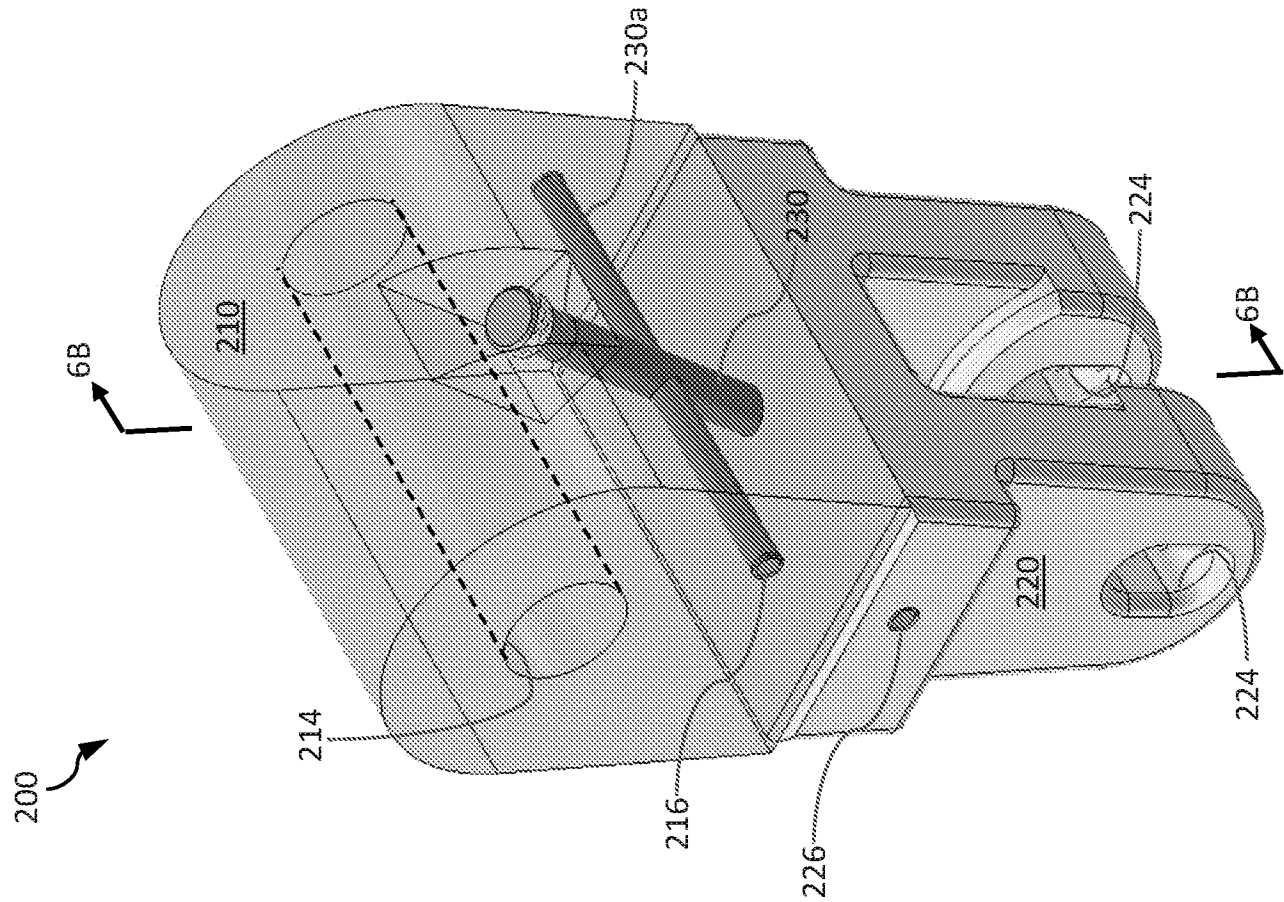


FIG. 6A



Cross-sectional line 6B-6B

FIG. 6B

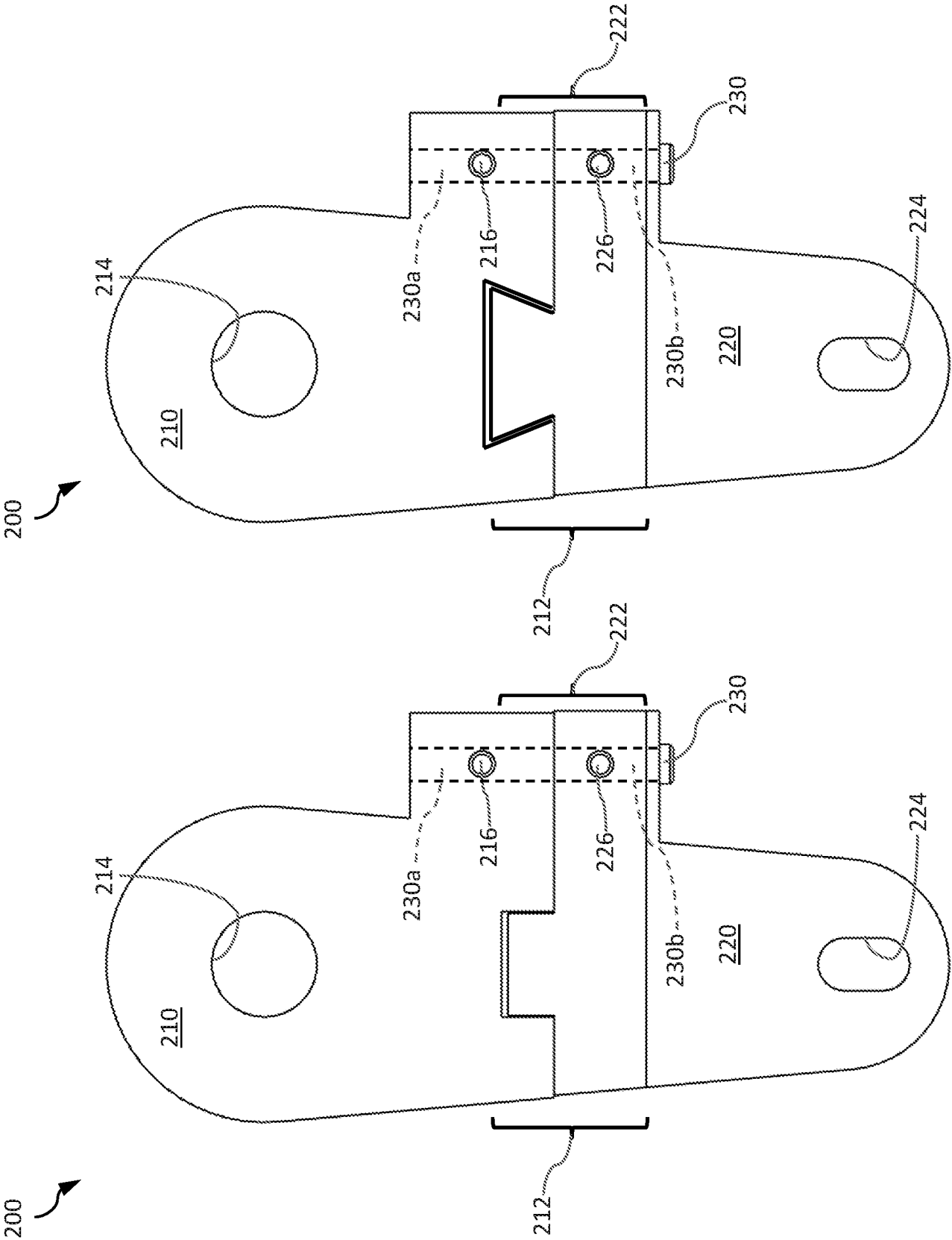


FIG. 7B

FIG. 7A



ELECTRONIC ACKNOWLEDGEMENT RECEIPT

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63/612,133

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Title of Invention

BREAKAWAY LINK FOR A SLIPS LIFTER

Application Information

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AUTHORIZED BY David Pittman

Documents

TOTAL DOCUMENTS: 4

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
1187-C-0471-US-P_ADS.pdf	9	Application Data Sheet	1780 KB
1187-C-0471-US-P_ProvCoverSheet.pdf	3	Provisional Cover Sheet (SB16)	1985 KB
1187-C-0471-US-P_Figures_Final.pdf	8	Drawings-other than black and white line drawings	2475 KB
1187-C-0471-US-P_Specification_Final-APP.TEXT.docx	19	Application body structured text document	49 KB

Warning: Text decorations have been removed. Bookmarks were found and have been removed.

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
1187-C-0471-US-P_ADS.pdf	0986167369AD5FBF97E54C6EBC5AB3AB36A7977C52EBBEEF 33529E1BDD8D00E4D0C2A3BCDE8019C7403CA021718DB4EA 7E4E0CE615070FD2DCA3CA0366EE7195
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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.

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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.

BREAKAWAY LINK FOR A SLIPS LIFTER

FIELD OF THE DISCLOSURE

[0001] The present invention relates, in general, to the field of drilling and processing of wells. More particularly, present embodiments relate to a system and method for protecting a slips lifter during subterranean operations.

BACKGROUND

[0002] Existing technologies can have a slips lifter that assists rig operators in manipulating slips on a rig floor during subterranean operations. The slips are used to carry the weight of the tubular string that extends into a wellbore when the top drive (or other pipe handler) is to be disconnected from the tubular string. When the top drive is again reconnected with the tubular string, then the slips are disengaged to prevent interference of the slips with operation of the tubular string. However, sometimes the tubular string can be rotated before the slips are disengaged from the tubular string. Since the slips lifter is not equipped to handle rotation of the slips, damage can occur that requires operations to stop for repairs to the slips lifter, the slips, or the well center equipment. Therefore, improvements in manipulating slips are continually needed.

SUMMARY

[0003] This summary is provided to introduce a selection of concepts that are further described below in the detailed description. This summary is not intended to identify indispensable features of the claimed subject matter, nor is it intended for use as an aid in limiting the scope of the claimed subject matter.

[0004] One general aspect includes a system for protecting a slips lifter during a subterranean operation. The system also includes slips configured to selectively engage a tubular string that extends into a wellbore; a slips lifter configured to selectively raise or lower the slips, and a link configured to decouple the slips from the slips lifter when the slips are rotated relative to the slips lifter.

[0005] A system of one or more computers can be configured to perform particular operations or actions by virtue of having software, firmware, hardware, or a combination of them installed on the system that in operation causes or cause the system to perform the actions. One or more computer programs can be configured to perform particular operations or actions by virtue of

including instructions that, when executed by data processing apparatus, cause the apparatus to perform the actions. One general aspect includes a method for protecting a slips lifter during a subterranean operation. The method also includes coupling a slips lifter, via a link, to slips on a rig floor; engaging the slips to a tubular, rotating the slips relative to the slips lifter, and decoupling the slips from the slips lifter by decoupling a first element of the link from a second element of the link in response to rotation of the slips. Other embodiments of this aspect include corresponding computer systems, apparatus, and computer programs recorded on one or more computer storage devices, each configured to perform the actions of the methods.

[0006] One general aspect includes a system for protecting a slips lifter during a subterranean operation. The system also includes slips configured to selectively engage a tubular string that extends into a wellbore; a slips lifter configured to selectively raise or lower the slips, and a link configured to decouple the slips from the slips lifter when the slips lifter attempts to lift the slips with the slips engaged with the tubular string. Other embodiments of this aspect include corresponding computer systems, apparatus, and computer programs recorded on one or more computer storage devices, each configured to perform the actions of the methods.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] These and other features, aspects, and advantages of present embodiments will become better understood when the following detailed description is read with reference to the accompanying drawings in which like characters represent like parts throughout the drawings, wherein:

[0008] FIG. 1 is a representative partial cross-section view of a rig used to perform subterranean operations, in accordance with certain embodiments;

[0009] FIGS. 2A and 2B are representative perspective views of a slips lifter on a rig floor for manipulating slips into or out of the bowl at well center, in accordance with certain embodiments; and

[0010] FIGS. 3A through 7B are representative perspective and partial cross-section views of configurations of a breakaway link 200 that can be used to decouple a slips lifter from the slips when rotation of the slips occur, in accordance with certain embodiments.

DETAILED DESCRIPTION

[0011] The following description in combination with the figures is provided to assist in understanding the teachings disclosed herein. The following discussion will focus on specific

implementations and embodiments of the teachings. This focus is provided to assist in describing the teachings and should not be interpreted as a limitation on the scope or applicability of the teachings.

[0012] FIG. 1 is a representative partial cross-sectional front view of a rig 10 at a rig site 11 being used to drill a wellbore 15 in a subterranean formation 8, in accordance with certain embodiments. Rig 10 can include a top drive 18 with a drawworks 44, sheaves 19, traveling block 28, anchor 47, and reel 48 used to raise or lower the top drive 18 via cable 46. A derrick 14 extending from the rig floor 16, can provide the structural support of the rig equipment for performing subterranean operations (e.g., drilling, treating, completing, producing, testing, etc.).

[0013] The rig can be used to extend a wellbore 15 through the subterranean formation 8 by using a tubular string 58 having a bottom hole assembly at its lower end. During drilling operations, drilling mud can be pumped from the surface 6 into the tubular string 58 (e.g., via pumps 84 supplying mud to the top drive 18 via the standpipe 86) to cool and lubricate the drill bit and to transport cuttings to the surface via an annulus 17 between the tubular string 58 and the wellbore 15.

[0014] The returned mud can be directed to the mud pit 88 from a rotating control device 66, through the flow line 81, to the shaker 80. A fluid treatment 82 can inject additives as desired to the mud to condition the mud appropriately for the current well activities and possibly future well activities as the mud is being pumped to the mud pit 88. Pump 84 can pull mud from the mud pit 88 and drive it to the top drive 18, via standpipe 86, to continue circulation of the mud through the tubular string 58. The wellbore 15 can have casing string 76 installed in the wellbore 15 and extending down to a casing shoe.

[0015] A rig controller 250 can be used to control rig operations including controlling various rig equipment, such as a pipe handler, the top drive 18, an iron roughneck, fingerboard equipment, imaging systems, various other robots on the rig 10, or rig power systems 260. The rig controller 250 can control the rig equipment autonomously (e.g., without periodic operator interaction), semi-autonomously (e.g., with limited operator interaction such as initiating a subterranean operation, adjusting parameters during the operation, etc.), or manually (e.g., with the operator interactively controlling the rig equipment via remote control interfaces to perform the subterranean operation).

[0016] The rig controller 250 can include one or more processors with one or more of the processors distributed about the rig 10, such as in an operator's control hut, in a pipe handler, in an iron roughneck, in a vertical storage area, in the imaging systems, in various other robots, in the top drive 18, at various locations on the rig floor 16 or the derrick 14 or the platform 12, at a remote location off of the rig 10, at downhole locations, etc. It should be understood that any of these processors can perform control or calculations locally or can communicate to a remotely located processor for performing the control or calculations. Each of the processors can be communicatively coupled to a non-transitory memory, which can include instructions for the respective processor to read and execute to implement the desired control functions or other methods described in this disclosure. These processors can be coupled via a wired or wireless network 154.

[0017] FIG. 2A is a representative perspective view of a slips lifter 100 for lifting the slips 72 from a bowl 62 at well center 24 to disengage the slips 72 from the bowl 62 and to prevent engagement with a tubular string 58. The slips lifter 100 can also be used to lower the slips 72 into the bowl 62 to enable engagement of the slips 72 with a tubular string 58. When the slips 72 are engaged with the tubular string 58 at well center 24, the slips 72 can carry the weight of the entire tubular string 58, such as when a tubular segment is being added to (tripping in) or removed from (tripping out) the tubular string 58. To disengage the slips 72 from the tubular string 58, the tubular string 58 can be lifted relative to well center 24, thereby removing the weight held by the slips 72. This can allow the slips lifter 100 to lift the slips 72 from the bowl 62 at well center 24, thereby removing engagement of the slips 72 from the tubular string 58 and allowing the tubular string 58 to be raised or lowered relative to the well center 24 without interference with the slips 72.

[0018] FIG. 2A shows the slips 72 raised from the bowl 62, via the slips lifter 100, to allow vertical movement of the tubular string 58 (not shown). The slips lifter 100 can have a base structure 104 that is coupled to the well center 24 (or rig floor 16 or master bushing 26) via one or more fasteners 108. The fasteners 108 can be any fasteners that can securely couple the base 104 to the rig floor, such as the quick release fasteners shown in FIG. 2A. A lift arm 102 can be rotationally coupled to the base 104 via a pivot 112, such that it can rotate (arrows 190) about the axis 90. When the actuator 106 is extended, the lift arm 102 can rotate upward relative to the base 104, and when the actuator 106 is retracted, the lift arm 102 can rotate downward relative to

the base 104. The slips 72 can be coupled to the lift arm 102 via a link 200 being coupled to the slips 72 at one end and a pivot 110 at the other end. Therefore, when the lift arm 102 is rotated upward, the link 200 can lift the slips 72 away from the bowl 62, and when the lift arm 102 is rotated downward, the link 200 can lower the slips 72 toward the bowl 62.

[0019] FIG. 2B shows the slips 72 lowered into the bowl 62 at well center 24 and engaged with a tubular string 58. When the slips 72 are disengaged from the tubular string 58, the tubular string 58 can be rotated (arrows 192) about the center axis 92 of the well center 24 by a pipe handler (e.g., top drive 18, robotic pipe handler, etc.). Unfortunately, the pipe handler may also attempt to rotate the tubular string 58 about the axis 92 when the slips 72 are engaged with the tubular string 58 or the slips lifter 100 may try to raise the slips 72 prior to the tubular string 58 being disengaged from the slips 72. Since the slips lifter 100 is engaged with the tubular string 58 via the slips 72, when the tubular string 58 is rotated, the slips 72 can also be rotated and possibly cause damage to the slips lifter 100. The current disclosure provides a breakaway link 200 that allows the slips lifter 100 to be decoupled from the slips 72 when the slips 72 are rotated due to engagement with the tubular string 58. The current disclosure also provides a breakaway link 200 that allows the slips lifter 100 to be decoupled from the slips 72 when the slips lifter 100 attempts to raise the slips 72 when they are still engaged with the tubular string 58.

[0020] The following figures illustrate various configurations of the breakaway link 200 for decoupling the slips 72 from the slips lifter 100 when the slips 72 are forced to rotate about the axis 92 relative to the slips lifter 100 or the slips 72 are attempted to be raised by the slips lifter 100 when the slips 72 are still engaged with the tubular string 58. In general, each of the configurations can include an upper element 210 and a lower element 220 that are coupled together by a sacrificial element 230 that can fail when a pre-determined force is applied to the breakaway link 200, thereby decoupling the lower element 220 from the upper element 210 and allowing the lower element 220 to disengage from the upper element 210.

[0021] The breakaway link 200 can include a mating interface that engages a mating feature 212 of the upper element 210 with a mating feature 222 of the lower element 220. The mating features 212, 222 can be any features that engage with each other and have complimentary shapes that receive each other, such as the examples shown in the following figures. However, it should be understood that these configurations of the mating features 212, 222 shown in the following figures are non-limiting embodiments and that mating features 212, 222 with different

configurations than these shown in the following figures are also envisioned by this disclosure. The mating features 212, 222 can engage each other to support the weight of the slips 72 when the slips 72 are lifted from the bowl 62. However, it is not required that the mating features 212, 222 support the weight of the slips 72, as shown in the FIGS. 6A, 6B, 7A. The sacrificial element 230 can support the weight of the slips 72.

[0022] The breakaway link 200 can include an upper bore 214 that can engage the pivot 110 to manipulate the slips 72 via the breakaway link 200. The breakaway link 200 can rotate about the pivot 110 as the lift arm 102 is raised or lowered. The breakaway link 200 can include a lower bore 224 that can engage the pivot 114 to manipulate the slips 72 via the breakaway link 200. The breakaway link 200 can rotate about pivot 114 as the slips 72 are raised or lowered by the lift arm 102.

[0023] FIGS. 3A and 3B show a non-limiting embodiment of a breakaway link 200, with an upper element 210 and a lower element 220. The bore 214 can receive the pivot 110 to rotationally couple the breakaway link 200 to the lift arm 102. The bore 224 can receive the pivot 114 to rotationally couple the breakaway link 200 to the slips 72. A mating feature 212 of the upper element 210 can engage a mating feature 222 of the lower element 220 to couple the upper element 210 to the lower element 220. The mating interface for this breakaway link 200 can be seen as a flat hook configuration with a flat portion of the lower element 220 extending into a recess space of the mating feature 212 of the upper element 210. A flat hook portion of the upper element 210 can extend into a recess space of the mating feature 222.

[0024] The engagement of the mating features 212, 222 can allow the breakaway link 200 to support the slips 72 from the lift arm 102, via the pivots 110, 114. A sacrificial element 230 can extend through portions of the mating features 212, 222 to maintain engagement of the mating features 212, 222 while the slips lifter 100 manipulates the slips 72. However, when the slips 72 are rotated relative to the slips lifter 100, then when pre-determined force is applied to the sacrificial element 230 by either the upper element 210 or the lower element 220, the sacrificial element 230 can fail (e.g., shear into two pieces) and allow the lower element 220 to disengage from the upper element 210 (i.e., the mating features 212, 222 to be unmated or disengaged).

[0025] Since it may be undesirable to allow the pieces of the sacrificial element 230 to drop out of the breakaway link 200 once the sacrificial element 230 fails, retention features 216, 226 can be used to retain the pieces of the sacrificial element 230 in their respective elements 210, 220

after the sacrificial element 230 fails. As shown in FIG. 3B, when the sacrificial element 230 fails, the upper end 230a (or upper portion) of the sacrificial element 230 can be retained in the mating feature 222 of the lower element 220 by the retention feature 226, and the lower end 230b (or lower portion) of the sacrificial element 230 can be retained in the mating feature 212 of the upper element 210 by the retention feature 216. The retention features 216, 226 are arranged perpendicular to the sacrificial element 230, but this perpendicular arrangement is not required. The retention features 216, 226 can be orientated at any angle relative to the sacrificial element 230 as long as the retention features 216, 226 retain the ends 230a, 230b of the sacrificial element 230 in their respective elements 210, 220.

[0026] FIGS. 4A and 4B show a non-limiting embodiment of a breakaway link 200, with an upper element 210 and a lower element 220. The breakaway link 200 is similar to the one shown in FIG. 3A, except that the sacrificial element 230 can be installed from the upper element 210 and extend into the lower element 220, and the upper element 210 can include two spaced apart protrusions, each having a bore 214 for receiving the pivot 110. The retention features 216, 226 can be rods with threads at one end to engage the upper or lower element 210, 220 with the rod portions extending to the sacrificial element 230 to engage outer grooves of the sacrificial element 230. If the sacrificial element 230 receives a pre-determined force between the upper element 210 and the lower element 220, the sacrificial element 230 can fail causing the upper end 230a to be retained in the upper element 210 by the retention feature 216 and the lower end 230b to be retained in the lower element 220 by the retention feature 226. The breakaway link 200 can be repaired by removing the retention features 216, 226, removing the ends 230a, 230b of the sacrificial element 230, installing a new unbroken sacrificial element 230, and then reinstalling the retention features 216, 226.

[0027] FIGS. 5A and 5B show a non-limiting embodiment of a breakaway link 200, with an upper element 210 and a lower element 220. The breakaway link 200 is similar to the one shown in FIG. 3A, except that the sacrificial element 230 can be installed from a side of the upper element 210 and extend horizontally through the mating feature 212 into the mating feature 222 of the lower element 220. The retention features 216, 226 can be a fastener with threads at one end 230a that can act as the retention feature 216, for retaining the end 230a in the upper element 210 when the sacrificial element 230 fails. The retention feature 226 can be a rod, like in FIG.

4B, that engages an annular groove in the end 230b of the sacrificial element 230 for retaining the end 230b in the lower element 220.

[0028] If the sacrificial element 230 receives a pre-determined force between the upper element 210 and the lower element 220, the sacrificial element 230 can fail causing the end 230a to be retained in the upper element 210 by the retention feature 216 and the lower end 230b to be retained in the lower element 220 by the retention feature 226. The breakaway link 200 can be repaired by unscrewing the retention feature 216 from the upper element 210, removing the retention feature 226 from the lower element 220, removing the piece 230b of the sacrificial element 230, installing a new unbroken sacrificial element 230, and then reinstalling the retention feature 226.

[0029] FIG. 6A shows a non-limiting embodiment of a breakaway link 200, with an upper element 210 and a lower element 220. This breakaway link 200 differs from the previous configurations in that it doesn't include mating features 212, 222. The upper element 210 is coupled to the lower element 220 via the sacrificial element 230, which in this case is used to transfer the lifting force applied to the breakaway link 200 by the lift arm 102, without mating features between the upper and lower elements 210, 220. If the lifting force of the lift arm 102 exceeds the pre-determined force, then the sacrificial element 230 will fail causing the lower element 220 to be decoupled from the upper element 210, with the ends 230a, 230b of the sacrificial element 230 being retained in the respective upper and lower elements 210, 220 by the respective retention features 216, 226. Additionally, if the slips are rotated with the tubular string 58 and the sacrificial element 230 receives a force greater than the pre-determined force, then the sacrificial element 230 will fail and will decouple the upper element 210 from the lower element 220.

[0030] FIG. 6B shows a partial cross sectional view of the breakaway link 200 of FIG. 6A along line 6B-6B. This shows that the sacrificial element 230 can be angled relative to the upper and lower elements 210, 220. The breakaway link 200 can be repaired by removing the retention features 216, 226, removing the ends 230a, 230b of the sacrificial element 230, installing a new unbroken sacrificial element 230, and then reinstalling the retention features 216, 226.

[0031] FIGS. 7A and 7B show non-limiting embodiments of a breakaway link 200, with an upper element 210 and a lower element 220. The upper element 210 can engage the lower element 220 via the mating features 212, 222. In FIG. 7A, the mating features 212, 222 can be a

groove and a mating ridge, which are not used for transferring a lifting force from the lift arm 102 to the slips 72 via the breakaway link 200. As in FIG. 6A, the upper element 210 can be coupled to the lower element 220 via the sacrificial element 230, which in FIG. 7A can be used to transfer the lifting force applied to the breakaway link 200 by the lift arm 102 to the slips 72, even with mating features between the upper and lower elements 210, 220.

[0032] If the lifting force of the lift arm 102 exceeds the pre-determined force, then the sacrificial element 230 can fail causing the lower element 220 to be decoupled from the upper element 210, with the ends 230a, 230b of the sacrificial element 230 being retained in the respective upper and lower elements 210, 220 by the respective retention features 216, 226. Additionally, if the slips are rotated with the tubular string 58 and the sacrificial element 230 receives a force greater than the pre-determined force, then the sacrificial element 230 can fail and decouple the upper element 210 from the lower element 220.

[0033] In FIG. 7B, the mating features 212, 222 can be a groove and mating ridge, such as a dovetail shape, which can be used to transfer a lifting force from the lift arm 102 to the slips 72 via the breakaway link 200. In this case, the mating features 212, 222 can limit vertical movement of the upper element 210 relative to the lower element 220 but can allow horizontal movement between them as in many of the previous configurations. If the slips are rotated with the tubular string 58 and the sacrificial element 230 receives a force greater than the pre-determined force, then the sacrificial element 230 can fail and decouple the upper element 210 from the lower element 220. The ends 230a, 230b of the sacrificial element 230 can be retained in the respective upper and lower elements 210, 220 by the respective retention features 216, 226, but the sacrificial element 230 may not be required to carry any of the lifting load.

[0034] As used herein, the terms “comprises,” “comprising,” “includes,” “including,” “has,” “having,” or any other variation thereof, are intended to cover a non-exclusive inclusion. For example, a process, method, article, or apparatus that comprises a list of features is not necessarily limited only to those features but may include other features not expressly listed or inherent to such process, method, article, or apparatus. Further, unless expressly stated to the contrary, “or” refers to an inclusive-or and not to an exclusive-or. For example, a condition A or B is satisfied by any one of the following: A is true (or present) and B is false (or not present), A is false (or not present) and B is true (or present), and both A and B are true (or present).

[0035] The use of “a” or “an” is employed to describe elements and components described herein. This is done merely for convenience and to give a general sense of the scope of the invention. This description should be read to include one or at least one and the singular also includes the plural, or vice versa, unless it is clear that it is meant otherwise.

[0036] The use of the word “about,” “approximately,” “generally,” or “substantially” is intended to mean that a value of a parameter is close to a stated value or position. However, minor differences may prevent the values or positions from being exactly as stated. Thus, differences of up to ten percent (10%) for the value are reasonable differences from the ideal goal of exactly as described. A significant difference can be when the difference is greater than ten percent (10%).

[0037] As used herein, “tubular” refers to an elongated cylindrical tube and can include any of the tubulars manipulated around a rig, such as tubular segments, tubular stands, tubulars, and tubular string, but not limited to the tubulars shown in FIG. 1A. Therefore, in this disclosure, “tubular” is synonymous with “tubular segment,” “tubular stand,” and “tubular string,” as well as “pipe,” “pipe segment,” “pipe stand,” “pipe string,” “casing string,” “coiled tubing,” or “wireline.”

[0038] It should be noted that the X-Y-Z coordinate axes are indicated in FIGS. XX and XX, where the X-Y-Z coordinate axes are relative to the rig floor 16. The rig floor 16 forms an X-Y plane with the Z axis being substantially perpendicular with the rig floor 16. As used herein, “horizontal,” “horizontal position,” or “horizontal orientation” refers to a position that is substantially parallel with the X-Y plane. As used herein, “vertical,” “vertical position,” or “vertical orientation” refers to a position that is substantially perpendicular relative to the X-Y plane or substantially parallel with the Z axis.

VARIOUS EMBODIMENTS

[0039] Embodiment 1. A system for protecting a slips lifter during a subterranean operation, the system comprising:

slips configured to selectively engage a tubular string that extends into a wellbore;

a slips lifter configured to selectively raise or lower the slips; and

a link configured to decouple the slips from the slips lifter when the slips are rotated relative to the slips lifter.

[0040] Embodiment 2. The system of embodiment 1, wherein the slips lifter raises the slips from or lowers the slips into engagement with the tubular string.

[0041] Embodiment 3. The system of embodiment 1, wherein the link comprises a first element and a second element, and wherein the first element is releasably coupled to the second element via a sacrificial element.

[0042] Embodiment 4. The system of embodiment 3, wherein the sacrificial element is threadably engaged with the first element and extends from the first element into the second element.

[0043] Embodiment 5. The system of embodiment 3, wherein the sacrificial element is threadably engaged with the second element and extends from the second element into the first element.

[0044] Embodiment 6. The system of embodiment 3, wherein the sacrificial element fails when the slips are rotated relative to the slips lifter.

[0045] Embodiment 7. The system of embodiment 6, wherein the slips are rotated relative to the slips lifter when the slips are engaged with the tubular string and the tubular string is rotated.

[0046] Embodiment 8. The system of embodiment 6, wherein the sacrificial element comprises a first portion and a second portion, with the first portion positioned in the first element of the link and the second portion positioned in the second element of the link.

[0047] Embodiment 9. The system of embodiment 8, wherein the first portion remains in the first element and the second portion remains in the second element, when the first element is decoupled from the second element.

[0048] Embodiment 10. The system of embodiment 8, further comprising:
a first retention feature that engages the first portion of the sacrificial element; and
a second retention feature that engages the second portion of the sacrificial element.

[0049] Embodiment 11. The system of embodiment 10, wherein the first retention feature retains the first portion in the first element of the link when the sacrificial element fails, and wherein the second retention feature retains the second portion in the second element of the link when the sacrificial element fails.

[0050] Embodiment 12. The system of embodiment 10, wherein the first retention feature is external threads at one end of the sacrificial element and the external threads engage internal threads of the first element or the second element.

[0051] Embodiment 13. The system of embodiment 3, wherein the first element comprises a first mating feature and the second element comprises a second mating feature, and wherein the first mating feature engages with the second mating feature to couple the first element to the second element.

[0052] Embodiment 14. The system of embodiment 3, wherein the first mating feature and the second mating feature, when engaged with each other, transfer a tension or compression force from between the first element and the second element of the link.

[0053] Embodiment 15. The system of embodiment 1, wherein the slips lifter comprises:
a base that is fixedly coupled to a rig floor; and
a lift arm rotationally coupled to the base via a first pivot at one end and coupled to the link at an opposite end via a second pivot.

[0054] Embodiment 16. The system of embodiment 15, wherein the link is coupled to the slips via a third pivot, and wherein upward rotation of the lift arm relative to the base lifts the slips via the link and downward rotation of the lift arm relative to the base lowers the slips via the link, when a sacrificial element remains undamaged.

[0055] Embodiment 17. The system of embodiment 16, wherein the lift arm is decoupled from the slips, when the sacrificial element fails.

[0056] Embodiment 18. The system of embodiment 17, wherein the sacrificial element fails in response to a shear force applied to the sacrificial element that exceeds a pre-determined force.

[0057] Embodiment 19. A method for protecting a slips lifter during a subterranean operation, the method comprising:

coupling a slips lifter, via a link, to slips on a rig floor;

engaging the slips to a tubular;

rotating the slips relative to the slips lifter; and

decoupling the slips from the slips lifter by decoupling a first element of the link from a second element of the link in response to rotation of the slips.

[0058] Embodiment 20. The method of embodiment 19, further comprising:

installing a sacrificial element in the link that extends through a portion of the first element and into a portion of the second element.

[0059] Embodiment 21. The method of embodiment 20, wherein decoupling the first element from the second element comprises the sacrificial element failing and separating into a first portion and a second portion.

[0060] Embodiment 22. The method of embodiment 21, further comprising:
retaining, via a first retention feature, the first portion in the first element when the sacrificial element fails; and
retaining, via a second retention feature, the second portion in the second element when the sacrificial element fails.

[0061] Embodiment 23. The method of embodiment 19, further comprising:
engaging a first mating feature of the first element with a second mating feature of the second element, thereby coupling the first element to the second element; and
installing a sacrificial element in the link to maintain engagement of the first mating feature with the second mating feature, until a pre-determined force is applied to the sacrificial element.

[0062] Embodiment 24. The method of embodiment 23, further comprising:
failing the sacrificial element in response to applying the pre-determined force; and
disengaging the first mating feature from the second mating feature due to the failing of the sacrificial element.

[0063] Embodiment 25. The method of embodiment 24, further comprising:
decoupling the first element from the second element due to the failing of the sacrificial element.

[0064] Embodiment 26. A system for protecting a slips lifter during a subterranean operation, the system comprising:
slips configured to selectively engage a tubular string that extends into a wellbore;
a slips lifter configured to selectively raise or lower the slips; and
a link configured to decouple the slips from the slips lifter when the slips lifter attempts to lift the slips with the slips engaged with the tubular string.

[0065] Embodiment 27. The system of embodiment 26, wherein the slips lifter applies a pre-determined force to the link when the slips lifter attempts to lift the slips with the slips engaged with the tubular string.

[0066] Embodiment 28. The system of embodiment 27, wherein the link comprises a first element and a second element, and wherein the first element is releasably coupled to the second

element via a sacrificial element, and wherein the pre-determined force causes the sacrificial element to fail.

[0067] Embodiment 29. The system of embodiment 28, wherein the sacrificial element is threadably engaged with the first element and extends from the first element into the second element.

[0068] Embodiment 30. The system of embodiment 28, wherein the sacrificial element is threadably engaged with the second element and extends from the second element into the first element.

[0069] Embodiment 31. The system of embodiment 28, wherein the sacrificial element comprises a first portion and a second portion, with the first portion positioned in the first element of the link and the second portion positioned in the second element of the link.

[0070] Embodiment 32. The system of embodiment 31, wherein the first portion remains in the first element and the second portion remains in the second element when the first element is decoupled from the second element.

[0071] Embodiment 33. The system of embodiment 31, further comprising:
a first retention feature that engages the first portion of the sacrificial element; and
a second retention feature that engages the second portion of the sacrificial element.

[0072] Embodiment 34. The system of embodiment 33, wherein the first retention feature retains the first portion in the first element of the link when the sacrificial element fails, and wherein the second retention feature retains the second portion in the second element of the link when the sacrificial element fails.

[0073] While the present disclosure may be susceptible to various modifications and alternative forms, specific embodiments have been shown by way of example in the drawings and tables and have been described in detail herein. However, it should be understood that the embodiments are not intended to be limited to the particular forms disclosed. Rather, the disclosure is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the disclosure as defined by the following appended claims. Further, although individual embodiments are discussed herein, the disclosure is intended to cover all combinations of these embodiments.

WHAT IS CLAIMED IS:

1. A system for protecting a slips lifter during a subterranean operation, the system comprising:
 - slips configured to selectively engage a tubular string that extends into a wellbore;
 - a slips lifter configured to selectively raise or lower the slips; and
 - a link configured to decouple the slips from the slips lifter when the slips are rotated relative to the slips lifter.
2. The system of claim 1, wherein the slips lifter raises the slips from or lowers the slips into engagement with the tubular string.
3. The system of claim 1, wherein the link comprises a first element and a second element, and wherein the first element is releasably coupled to the second element via a sacrificial element.
4. The system of claim 3, wherein the sacrificial element is threadably engaged with the first element and extends from the first element into the second element.
5. The system of claim 3, wherein the sacrificial element is threadably engaged with the second element and extends from the second element into the first element.
6. The system of claim 3, wherein the sacrificial element fails when the slips are rotated relative to the slips lifter.
7. The system of claim 6, wherein the slips are rotated relative to the slips lifter when the slips are engaged with the tubular string and the tubular string is rotated.
8. The system of claim 6, wherein the sacrificial element comprises a first portion and a second portion, with the first portion positioned in the first element of the link and the second portion positioned in the second element of the link.
9. The system of claim 8, wherein the first portion remains in the first element and the second portion remains in the second element, when the first element is decoupled from the second element.
10. The system of claim 8, further comprising:
 - a first retention feature that engages the first portion of the sacrificial element; and
 - a second retention feature that engages the second portion of the sacrificial element.
11. The system of claim 10, wherein the first retention feature retains the first portion in the first element of the link when the sacrificial element fails, and wherein the second retention

feature retains the second portion in the second element of the link when the sacrificial element fails.

12. The system of claim 10, wherein the first retention feature is external threads at one end of the sacrificial element and the external threads engage internal threads of the first element or the second element.

13. The system of claim 3, wherein the first element comprises a first mating feature and the second element comprises a second mating feature, and wherein the first mating feature engages with the second mating feature to couple the first element to the second element.

14. The system of claim 3, wherein the first mating feature and the second mating feature, when engaged with each other, transfer a tension or compression force from between the first element and the second element of the link.

15. The system of claim 1, wherein the slips lifter comprises:
a base that is fixedly coupled to a rig floor; and
a lift arm rotationally coupled to the base via a first pivot at one end and coupled to the link at an opposite end via a second pivot.

16. The system of claim 15, wherein the link is coupled to the slips via a third pivot, and wherein upward rotation of the lift arm relative to the base lifts the slips via the link and downward rotation of the lift arm relative to the base lowers the slips via the link, when a sacrificial element remains undamaged.

17. The system of claim 16, wherein the lift arm is decoupled from the slips, when the sacrificial element fails.

18. The system of claim 17, wherein the sacrificial element fails in response to a shear force applied to the sacrificial element that exceeds a pre-determined force.

19. A method for protecting a slips lifter during a subterranean operation, the method comprising:

coupling a slips lifter, via a link, to slips on a rig floor;
engaging the slips to a tubular;
rotating the slips relative to the slips lifter; and
decoupling the slips from the slips lifter by decoupling a first element of the link from a second element of the link in response to rotation of the slips.

20. The method of claim 19, further comprising:

installing a sacrificial element in the link that extends through a portion of the first element and into a portion of the second element.

21. The method of claim 20, wherein decoupling the first element from the second element comprises the sacrificial element failing and separating into a first portion and a second portion.

22. The method of claim 21, further comprising:

retaining, via a first retention feature, the first portion in the first element when the sacrificial element fails; and

retaining, via a second retention feature, the second portion in the second element when the sacrificial element fails.

23. The method of claim 19, further comprising:

engaging a first mating feature of the first element with a second mating feature of the second element, thereby coupling the first element to the second element; and

installing a sacrificial element in the link to maintain engagement of the first mating feature with the second mating feature, until a pre-determined force is applied to the sacrificial element.

24. The method of claim 23, further comprising:

failing the sacrificial element in response to applying the pre-determined force; and

disengaging the first mating feature from the second mating feature due to the failing of the sacrificial element.

25. The method of claim 24, further comprising:

decoupling the first element from the second element due to the failing of the sacrificial element.

26. A system for protecting a slips lifter during a subterranean operation, the system comprising:

slips configured to selectively engage a tubular string that extends into a wellbore;

a slips lifter configured to selectively raise or lower the slips; and

a link configured to decouple the slips from the slips lifter when the slips lifter attempts to lift the slips with the slips engaged with the tubular string.

27. The system of claim 26, wherein the slips lifter applies a pre-determined force to the link when the slips lifter attempts to lift the slips with the slips engaged with the tubular string.

28. The system of claim 27, wherein the link comprises a first element and a second element, and wherein the first element is releasably coupled to the second element via a sacrificial element, and wherein the pre-determined force causes the sacrificial element to fail.

29. The system of claim 28, wherein the sacrificial element is threadably engaged with the first element and extends from the first element into the second element.

30. The system of claim 28, wherein the sacrificial element is threadably engaged with the second element and extends from the second element into the first element.

31. The system of claim 28, wherein the sacrificial element comprises a first portion and a second portion, with the first portion positioned in the first element of the link and the second portion positioned in the second element of the link.

32. The system of claim 31, wherein the first portion remains in the first element and the second portion remains in the second element when the first element is decoupled from the second element.

33. The system of claim 31, further comprising:
a first retention feature that engages the first portion of the sacrificial element; and
a second retention feature that engages the second portion of the sacrificial element.

34. The system of claim 33, wherein the first retention feature retains the first portion in the first element of the link when the sacrificial element fails, and wherein the second retention feature retains the second portion in the second element of the link when the sacrificial element fails.

ABSTRACT

A system that can include slips configured to selectively engage a tubular string that extends into a wellbore, a slips lifter configured to selectively raise or lower the slips, and a link configured to decouple the slips from the slips lifter when the slips are rotated relative to the slips lifter. A method that can include operations of coupling a slips lifter, via a link, to slips on a rig floor, engaging the slips to a tubular, rotating the slips relative to the slips lifter, and decoupling the slips from the slips lifter by decoupling a first element of the link from a second element of the link in response to rotation of the slips.