

A 8009797

**LOS ESTADOS UNIDOS DE AMÉRICA
A QUIEN PUEDA INTERESAR:**

**DEPARTAMENTO DE COMERCIO DE LOS ESTADOS UNIDOS
Oficina de Patentes y Marcas de los Estados Unidos**

18 de julio de 2019

**EL PRESENTE DOCUMENTO CERTIFICA QUE EL DOCUMENTO ANEXO ES UNA
COPIA FIEL DE LOS REGISTROS DE ESTA OFICINA DE UN DOCUMENTO
REGISTRADO EL 31 DE JULIO DE 2018.**

**Por facultad del
Subsecretario de Comercio para Propiedad Intelectual
y Director de la Oficina de Patentes y Marcas de los
Estados Unidos**

**[sello en relieve: OFICINA DE PATENTES Y MARCAS DE LOS ESTADOS UNIDOS
DEPARTAMENTO DE COMERCIO]**

**[firma ilegible]
SYLVIA HOLLEY
Funcionario que Certifica**

CARÁTULA DE TRASPASO DE PATENTE

Versión Electrónica v1.1
Hoja de Estilo Versión v1.2

EPAS ID: PAT5075449

TIPO DE PRESENTACIÓN	NUEVO TRASPASO		
NATURALEZA DE TRANSFERENCIA	TRASPASO		
INFORMACIÓN DE CEDENTES			
Nombre			Fecha de Ejecución
ASHISH GUPTA			31/07/2018
PADIRA REDDY			31/07/2018
DENVER LEE			31/07/2018
INFORMACIÓN DE CESIONARIO			
Nombre:	NABORS DRILLING TECHNOLOGIES USA, INC.		
Dirección:	515 WEST GREENS ROAD, OFICINA 1000		
Ciudad:	HOUSTON		
Estado/País:	TEXAS		
Código Postal:	77067		
NÚMEROS DE PROPIEDADES Total: 1			
Tipo de Propiedad		Número	
Número de Solicitud:	62700704		
INFORMACIÓN DE CORRESPONDENCIA			
Número de Fax: (832)830-8958			
Correspondencia será enviada al correo electrónico primero; si eso no es exitoso, será enviada al número de fax, si se proporciona; si eso no es exitoso, será enviada vía correo postal.			
Teléfono:		281.974.3458	
Correo electrónico:		docket@adolphlocklar.com	
Nombre de corresponsal:		ADOLPH LOCKLAR	
Línea de Dirección 1:		4615 S.W. FREEWAY	
Línea de Dirección 2:		OFICINA 630	
Línea de Dirección 3:		HOUSTON, TEXAS 77027	
NÚMERO DE EXPEDIENTE:		NABORS.015015	
NÚMERO DE REMITENTE:		KIMBERLY WATTNER	
Firma:		/Michael Locklar/	
Fecha:		31/07/2018	
Adjuntos Totales: 4			
source=Nabors015015_Executed_Assignment#page1.tif			
source=Nabors015015_Executed_Assignment#page2.tif			
source=Nabors015015_Executed_Assignment#page3.tif			
source=Nabors015015_Executed_Assignment#page4.tif			

TRASPASO DE PATENTE

Por el pago de un dólar y otra contraprestación válida, los individuos abajo firmantes (cada uno el "Cedente") ceden, transfieren y traspasan a:

NABORS DRILLING TECHNOLOGIES USA, INC.

una compañía de Delaware que tiene la siguiente dirección:

515 West Greens Road, Suite 1000
Houston, TX 77067

("Cesionario), sus sucesores, y ceden, todo el derecho, título e interés, en todo el mundo, en y para:

1. Todas las invenciones (las "Invenciones") reivindicadas o que pueden ser reivindicadas en la siguiente solicitud de patente (la "Solicitud"):

EQUIPO DE PERFORACIÓN DE MOVIMIENTO CONTINUO CON HONDA DE MONTAJE LATERAL

Solicitud No.: 62/700.704

Fecha de Presentación: Julio 19, 2018

2. la Solicitud, y todas las solicitudes de patentes presentes y futuras en cualquier país que reivindiquen prioridad en la misma, y todas las divisiones, continuaciones, continuaciones en parte, reemisiones, reexaminaciones, y extensiones, y todas las patentes (nacionales y extranjeras) que puedan otorgarse para la misma (colectivamente; las "Patentes Mundiales y Solicitudes de Patentes");
3. todos los derechos de patente relacionados con la Invención, la Solicitud y las Patentes Mundiales y Solicitudes de Patentes
4. todo derecho a demandar por infracción pasada y futura de cualquiera de las Patentes Mundiales y Solicitudes de Patentes.

Cada Cedente, de vez en cuando, ejecutará y entregará todos los acuerdos y otros documentos razonablemente necesarios para dar efecto a este traspaso.

Este Traspaso de Patente es vinculante para cada Cedente y sus sucesores, herederos y cesionarios para el beneficio del Cesionarios y sus sucesores y cesionarios.

Fecha: _____

Ilegible

Ashish GUPTA

En _____, Ashish GUPTA reconoció este Traspaso de Patente.

Sello y Firma de Notario

Notario Público del Estado de ____

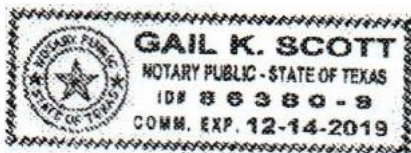
Mi Comisión Vence: _____

Fecha: Julio 31, 2018

Ilegible

Padira REDDY

En Julio 31, 2018, Padira REDDY reconoció este Traspaso de Patente.



Ilegible

Sello y Firma de Notario

Notario Público del Estado de Texas

Mi Comisión Vence: 14-12-2019

Fecha: Julio 31, 2018

Ilegible

Ashish GUPTA

En Julio 31, 2018, Ashish GUPTA reconoció este Traspaso de Patente.



Ilegible

Sello y Firma de Notario

Notario Público del Estado de Texas

Mi Comisión Vence: 14-12-2019

Fecha: _____

Padira REDDY

En _____, Padira REDDY reconoció este Traspaso de Patente.

Sello y Firma de Notario

Notario Público del Estado de ____

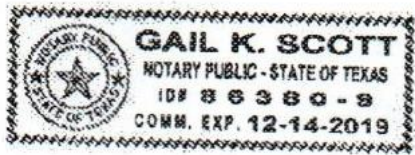
Mi Comisión Vence: _____

Fecha: Julio 31, 2018

Ilegible

Denver LEE

En Julio 31, 2018, Denver LEE reconoció este Traspaso de Patente.



Ilegible

Sello y Firma de Notario

Notario Público del Estado de Texas

Mi Comisión Vence: 14-12-2019

A 8009797

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

July 18, 2019

**THIS IS TO CERTIFY THAT ANNEXED IS A TRUE COPY FROM THE
RECORDS OF THIS OFFICE OF A DOCUMENT RECORDED ON
JULY 31, 2018.**

By Authority of the

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



Sylvia Holley
SYLVIA HOLLEY
Certifying Officer

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT5075449

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
ASHISH GUPTA	07/31/2018
PADIRA REDDY	07/31/2018
DENVER LEE	07/31/2018
RECEIVING PARTY DATA	
Name:	NABORS DRILLING TECHNOLOGIES USA, INC.
Street Address:	515 WEST GREENS ROAD, SUITE 1000
City:	HOUSTON
State/Country:	TEXAS
Postal Code:	77067
PROPERTY NUMBERS Total: 1	
Property Type	Number
Application Number:	62700704
CORRESPONDENCE DATA	
Fax Number:	(832)830-8958
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
Phone:	281.974.3458
Email:	docket@adolphlocklar.com
Correspondent Name:	ADOLPH LOCKLAR
Address Line 1:	4615 SOUTHWEST FREEWAY
Address Line 2:	SUITE 630
Address Line 4:	HOUSTON, TEXAS 77027
ATTORNEY DOCKET NUMBER:	NABORS.015015
NAME OF SUBMITTER:	KIMBERLY WATTNER
SIGNATURE:	/Michael Locklar/
DATE SIGNED:	07/31/2018
Total Attachments: 4	
source=Nabors015015_Executed_Assignment#page1.tif	
source=Nabors015015_Executed_Assignment#page2.tif	
source=Nabors015015_Executed_Assignment#page3.tif	

PATENT ASSIGNMENT

In consideration of one dollar and other good consideration, each of the undersigned (each an "Assignor") assigns, transfers, and sets over to:

NABORS DRILLING TECHNOLOGIES USA, INC.

a corporation of Delaware having the following address:

515 West Green Road, Suite 1000
Houston, TX 77067

("Assignee"), Assignee's successors, and assigns, the entire right, title, and interest, worldwide, in and to:

1. all inventions (the "Inventions") claimed or that could be claimed in the following patent application (the "Application"):

SIDE SADDLE SLINGSHOT CONTINUOUS MOTION RIG

Application Number: 62/700,704

Filing Date: July 19, 2018

2. the Application, and all present and future patent applications in any country claiming priority thereto, and all divisions, continuations, continuations-in-part, reissues, reexaminations, and extensions, and all patents (domestic and foreign) that may be granted therefor (collectively, the "World-Wide Patents and Patent Applications");
3. all patent rights relating to the Inventions, the Application, and the World-Wide Patents and Patent Applications;
4. all right to sue for past and future infringement of any of the World-Wide Patents and Patent Applications.

Each Assignor shall, from time to time, execute and deliver all agreements and other documents reasonably necessary to give effect to this assignment.

This Patent Assignment is binding on each Assignor and each Assignor's successors, heirs and assigns for the benefit of Assignee and Assignee's successors and assigns.

Date: _____

Ashish GUPTA

On _____, 20____, Ashish GUPTA acknowledged this Patent Assignment.

Notary Stamp and Signature

Notary Public for the State of _____

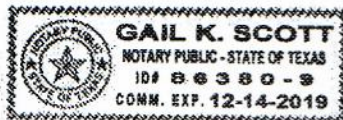
My Commission Expires: _____

Date: 7-31-2018.

Padira Reddy

Padira REDDY

On July 31, 2018, Padira REDDY acknowledged this Patent Assignment.



Gail K. Scott
Notary Stamp and Signature

Notary Public for the State of Texas.

My Commission Expires: 12-14-2019.

Date: 7-31-2018.

Ashish Gupta

Ashish GUPTA

On July 31, 2018 Ashish GUPTA acknowledged this Patent Assignment.



Gail K. Scott
Notary Stamp and Signature

Notary Public for the State of Texas.

My Commission Expires: 12-14-2019

Date: _____

Padira REDDY

On _____, 20__, Padira REDDY acknowledged this Patent Assignment.

Notary Stamp and Signature

Notary Public for the State of _____

My Commission Expires: _____

Date: 31 July 2018



Denver LEE

On July 31, 2018, Denver LEE acknowledged this Patent Assignment.



Gail K. Scott
Notary Stamp and Signature

Notary Public for the State of Texas

My Commission Expires: 12-14-2019

LOS ESTADOS UNIDOS DE AMÉRICA
A QUIEN PUEDA INTERESAR:

DEPARTAMENTO DE COMERCIO DE LOS ESTADOS UNIDOS
Oficina de Patentes y Marcas de los Estados Unidos

18 de julio de 2019

EL PRESENTE DOCUMENTO CERTIFICA QUE EL DOCUMENTO ANEXO ES UNA COPIA FIEL DE LOS REGISTROS DE LA OFICINA DE PATENTES Y MARCAS DE LOS ESTADOS UNIDOS DE LOS DOCUMENTOS DE LA SOLICITUD DE PATENTE QUE SE IDENTIFICA A CONTINUACIÓN QUE CUMPLIÓ CON LOS REQUISITOS PARA OTORGÁRSELE UNA FECHA DE PRESENTACIÓN BAJO 35 USC 111.

NÚMERO DE SOLICITUD: *62/700,704*

FECHA DE PRESENTACIÓN: *19 de julio de 2018*

EL CÓDIGO DE PAÍS Y EL NÚMERO DE SU SOLICITUD DE PRIORIDAD, QUE SE UTILIZARÁ PARA LA PRESENTACIÓN EN EL EXTRANJERO DE CONFORMIDAD CON LA CONVENCIÓN DE PARÍS, ES *US62/700,704*

Por facultad del
Subsecretario de Comercio para Propiedad Intelectual
y Director de la Oficina de Patentes y Marcas de los
Estados Unidos

[sello en relieve: OFICINA DE PATENTES Y MARCAS DE LOS ESTADOS UNIDOS
DEPARTAMENTO DE COMERCIO]

[firma ilegible]
W. MONTGOMERY
Funcionario que Certifica

Acuse de Recibo Electrónico	
ID EFS:	33232074
Número de Aplicación:	62700704
Número de Aplicación Internacional:	
Número de Confirmación:	5101
Título de la Invención:	EQUIPO DE PERFORACIÓN DE MOVIMIENTO CONTINUO CON HONDA DE MONTAJE LATERAL
Primer Inventor Nombrado/Nombre de Solicitante:	Ashish GUPTA
Número de Cliente:	100183
Declarante:	Michael G. Locklar/Kimberly Wattner
Declarante Autorizado por:	Michael G. Locklar
Número de Expediente:	Nabors.015015
Fecha de Recibo:	JUL-19-2018
Fecha de Presentación:	
Hora de Registro:	17:54:23
Tipo de Aplicación:	Provisional
Información del Pago:	
Presentado con Pago	Sí
Tipo de Pago	CARD
Pago fue recibido exitosamente en RAM	\$ 280
Número de Confirmación RAM	072018INTEFSW17550301
Cuenta de Depósito	505629
Usuario Autorizado	Kimberly Wattner
El Director de la USPTO está autorizado por la presente para cobrar tarifas específicas y acreditar cualquier pago en exceso según lo establecido en: 37 CFR 1.16 (Tarifas de presentación de solicitud nacional, búsqueda y examen) 37 CFR 1.17 (Tarifas de solicitud de patente y procesamiento de reexaminación) 37 CFR 1.19 (Tarifas de suplemento de documento) 37 CFR 1.20 (Tarifas post-expedición) 37 CFR 1.21 (Tarifas y cargos varios)	

Listado de Archivos:					
Número de Documento	Descripción de Documento	Nombre de Archivo	Tamaño del Archivo (Bytes)/Compendios del Mensaje	Multiparte /.zip	Págs (Si aplica)
1	Hoja Técnica de la Solicitud	NABORS015015_ADS.pdf	1505225	No	7
			14bdb2008873b250a2d751288d1c3b569963897		
Advertencias:					
Información:					
2		Nabors015015_Specification.pdf	215841	Sí	37
			8fc1e50a2b586c87623deadc8eed6ad692c75e75		
	Descripción Multiparte/Descripción de Archivos PDF en .zip				
	Descripción de Documento		Inicio	Fin	
	Descripción		1	24	
	Reivindicaciones		25	36	
	Resumen		37	37	
Advertencias:					
Información:					
3	Dibujos – únicamente dibujos con líneas en blanco y negro	Nabors015015_Drawings.pdf	5243190	No	34
			6454038c872333dd9c039c4cdbbef787cd4fe06		
Advertencias:					
Información:					
4	Poder	POA.pdf	133003	No	1
			14820777216d6d658736a88c6d7a295612a764e3		
Advertencias:					
Información:					
5	Hoja de Cálculo de Tarifas (SB06)	fee-info.pdf	29815	No	2
			7f21aed6448d5ed13da07d908286b11c0b872fea		
Advertencias:					
Información:					

Tamaño Total de Archivos (en bytes)	7127074
Este Acuse de Recibo evidencia la recepción en la fecha señalada por la USPTO de los documentos indicados, caracterizados por el solicitante, e incluyendo el recuento de páginas, cuando corresponda. Sirve como una prueba de recibo similar a una tarjeta postal, como se describe en MPEP 503. <u>Nuevas Aplicaciones Bajo 35 U.S.C.111</u> Si se está presentando una nueva solicitud y la solicitud incluye los componentes necesarios para una fecha de presentación (consulte 37 CFR 1.53(b)-(d) y MPEP 506), se emitirá un Recibo de Presentación (37 CFR 1.54) a su debido tiempo y la fecha que se muestra en este Acuse de Recibo establecerá la fecha de presentación de la solicitud. <u>Etapas Nacional de una Solicitud Internacional bajo 35 U.S.C. 371</u> Si una presentación oportuna para ingresar a la etapa nacional de una solicitud internacional cumple con las condiciones de 35 U.S.C. 371 y otros requisitos aplicables, un Formulario PCT/DO/EO/903 que indica la aceptación de la solicitud como una presentación de etapa nacional según 35 U.S.C. 371 se expedirá además del Recibo de Presentación, a su debido tiempo. <u>Nueva Solicitud Internacional Presentada ante la USPTO como Oficina de Recepción</u> Si se está presentando una nueva solicitud internacional y la solicitud internacional incluye los componentes necesarios para una fecha de presentación internacional (consulte el Artículo 11 del PCT y MPEP 1810), una Notificación del Número de Solicitud Internacional y de la Fecha de Presentación Internacional (formulario PCT/RO/105) se publicarán a su debido tiempo, sujeto a las prescripciones relativas a la seguridad nacional, y la fecha que figura en este Acuse de Recibo establecerá la fecha de presentación internacional de la solicitud.	

Hoja Técnica de la Solicitud 37 CFR 1.76	Número de Expediente	NABORS.015015
	Número de Solicitud	
Título de la Invención	EQUIPO DE PERFORACIÓN DE MOVIMIENTO CONTINUO CON HONDA DE MONTAJE LATERAL	

La Hoja Técnica de la Solicitud es parte de una aplicación provisional o no provisional para la cual se está presentando. El siguiente formulario contiene información bibliográfica que se encuentra en un formato especificado por la Oficina de Patentes y Marcas de los Estados Unidos como se describe en 37 CFR 1.76. Este documento puede completarse de manera efectiva y enviarse a la Oficina por correo electrónico utilizando el Sistema de Presentación Electrónico (EFS, por sus siglas en inglés) o el documento puede imprimirse e incluirse en una solicitud presentada en papel.

Orden de Confidencialidad 37 CFR 5.2:

☐ Partes o la totalidad de la solicitud asociada con esta Hoja Técnica de la Solicitud pueden caer en una Orden de Confidencialidad conforme a 37 CFR 5.2 (Solo para los que presentan documentos en papel. Las solicitudes incluidas en la Orden de Confidencialidad no pueden presentarse electrónicamente).

Información del Inventor

Inventor 1					Eliminar
Nombre Legal					
Prefijo	Primer Nombre	Segundo Nombre	Apellido	Sufijo	
	Ashish		GUPTA		
Información de Residencia (Seleccione una):					
☒ Residencia en EE.UU. ☐ No Residencia en EE.UU. ☐ Servicio Militar de EE.UU. Activo					
Ciudad	Houston	Estado/Provincia	TX	País de Residencia	EE.UU.
Dirección de Envío del Inventor:					
Dirección 1		c/o Nabors Drilling Technologies USA, Inc.			
Dirección 2		515 West Greens Road, Oficina 1000			
Ciudad	Houston	Estado/Provincia	TX		
Código Postal	77067	País	EE.UU.		
Inventor 2					Eliminar
Nombre Legal					
Prefijo	Primer Nombre	Segundo Nombre	Apellido	Sufijo	
	Padira		REDDY		

Hoja Técnica de la Solicitud 37 CFR 1.76	Número de Expediente	NABORS.015015
	Número de Solicitud	
Título de la Invención	EQUIPO DE PERFORACIÓN DE MOVIMIENTO CONTINUO CON HONDA DE MONTAJE LATERAL	

Información de Residencia (Seleccione una):
☒ Residencia en EE.UU. ☐ No Residencia en EE.UU. ☐ Servicio Militar de EE.UU. Activo

Ciudad	Richmond	Estado/Provincia	TX	País de Residencia	EE.UU.
--------	----------	------------------	----	--------------------	--------

Dirección de Envío del Inventor:

Dirección 1	c/o Nabors Drilling Technologies USA, Inc.				
Dirección 2	515 West Greens Road, Oficina 1000				
Ciudad	Houston	Estado/Provincia	TX		
Código Postal	77067	País	EE.UU.		

Inventor 3

Eliminar

Nombre Legal

Prefijo	Primer Nombre	Segundo Nombre	Apellido	Sufijo
	Denver		LEE	

Información de Residencia (Seleccione una):
☒ Residencia en EE.UU. ☐ No Residencia en EE.UU. ☐ Servicio Militar de EE.UU. Activo

Ciudad	Houston	Estado/Provincia	TX	País de Residencia	EE.UU.
--------	---------	------------------	----	--------------------	--------

Dirección de Envío del Inventor:

Dirección 1	c/o Nabors Drilling Technologies USA, Inc.				
Dirección 2	515 West Greens Road, Oficina 1000				
Ciudad	Houston	Estado/Provincia	TX		
Código Postal	77067	País	EE.UU.		

Todos los Inventores deben Enlistarse – Casillas de Información de Inventor Adicional pueden generarse dentro de este formulario
Seleccionando el botón **Agregar**.

Agregar

Información de Correspondencia:

Introduzca el Número de Cliente o complete la sección de Información de Correspondencia a continuación.
Para mayor información vea 37 CFR 1.33(a).

Hoja Técnica de la Solicitud 37 CFR 1.76	Número de Expediente	NABORS.015015
	Número de Solicitud	
Título de la Invención	EQUIPO DE PERFORACIÓN DE MOVIMIENTO CONTINUO CON HONDA DE MONTAJE LATERAL	

☐ Una Dirección se provee para la información de correspondencia de esta solicitud.

Número de Cliente	100183		
Correo Electrónico	docket@al-ip.com	Agregar Correo	Eliminar Correo

Información de Aplicación:

Título de la Invención	EQUIPO DE PERFORACIÓN DE MOVIMIENTO CONTINUO CON HONDA DE MONTAJE LATERAL		
Número de Expediente	NABORS.015015	Estatus de Entidad Pequeña Reclamado ☐	
Tipo de Solicitud	Provisional		
Materia	Utilidad		
Número Total de Hojas de Dibujo (si aplica)	34	Figura Sugerida para Publicación	

Información de Publicación

☐ Solicitud de Publicación Anticipada (Tarifa requerida al momento de la Solicitud 37 CFR 1.219)

☐ **Solicitud para No Publicar.** Por la presente, solicito que la solicitud adjunta no sea publicada bajo 35 U.S.C. 11(b) y certifico que la invención divulgada en la solicitud adjunto **no tiene y no será** el objeto de una solicitud presentada en otro país, o bajo un acuerdo multilateral internacional, que requiera publicación a los 18 meses después de ser presentada.

Información del Representante

Información del representante debería ser dispuesta a todos los profesionales que tienen un poder legal en la solicitud. Proveer esta información en la Hoja Técnica de la Solicitud no constituye un poder legal en la solicitud (véase 37 CFR 1.32). Introduzca el Número de Cliente o complete la sección de Nombre del Representante a continuación. Si ambas secciones se completan, el Número de Cliente será usado para la Información del Representante durante el trámite.

Por favor Seleccione Una:	☒ Número de Cliente	☐ Profesional de Patentes de EE.UU.	☐ Reconocimiento Limitado (37 CFR 11.9)
Número de Cliente	100183		

Hoja Técnica de la Solicitud 37 CFR 1.76	Número de Expediente	NABORS.015015
	Número de Solicitud	
Título de la Invención	EQUIPO DE PERFORACIÓN DE MOVIMIENTO CONTINUO CON HONDA DE MONTAJE LATERAL	

Información de Beneficio Doméstico/Fase Nacional

Esta sección permite al solicitante reivindicar beneficio bajo 35 U.S.C. 119€, 120, 121, 365(c), o 386(c) o indicar entrada en Fase Nacional de una solicitud PCT. Proveer información de reivindicación de beneficio en la Hoja Técnica de la Solicitud constituye la referencia específica requerida por 35 U.S.C. 119(e) o 120, y 37 CFR 1.78. Cuando se refiera a la presente solicitud, por favor deje el campo “Número de Solicitud” en blanco.

Estatus de Solicitud Anterior		Eliminar	
Número de Solicitud	Tipo de Continuidad	Número de Solicitud Anterior	Presentación o Fecha 371(c) (YYYY-MM-DD)

Datos adicionales de Beneficio Doméstico/Fase Nacional pueden ser generados dentro de este formulario seleccionando el botón **Agregar**.

Información de Prioridad Extranjera

Esta sección permite al solicitante reclamar prioridad en una solicitud extranjera. Proveer esta información en la Hoja Técnica de la Solicitud constituye la reivindicación de prioridad como lo requiere 35 U.S.C. 119(b) y 37 CFR 1.55. Cuando la prioridad se reivindica en una solicitud extranjera que es elegible para recuperación bajo el programa de intercambio de documento de prioridad (PDX, por sus siglas en inglés), la información será usada por la Oficina para automáticamente intentar la recuperación. Según el 37 CFR 1.55 (i)(1) y (2). Bajo el programa PDX, el solicitante tiene la máxima responsabilidad de asegurar que una copia de la solicitud extranjera sea recibida por la Oficina de la oficina extranjera de propiedad intelectual participante, o una copia certificada de la solicitud de prioridad extranjera sea presentada, dentro del periodo de tiempo especificado en 37 CFR 1.55(g)(1).

Número de Solicitud	País	Fecha de Presentación (YYYY-MM-DD)	Eliminar Código de Acceso (si aplica)

Datos adicionales de Prioridad Extranjera pueden ser generados dentro de este formulario seleccionando el botón **Agregar**.

Declaración bajo 37 CFER 1.55 o 1.78 para Solicitudes de Transición de AIA (Primer Inventor en Presentar)

☐ Esta solicitud (1) reivindica prioridad a o el beneficio de una solicitud presentada antes del 16 de marzo de 2013 y (2) también contiene o contuvo en cualquier momento una reivindicación de una invención reivindicada que tiene una fecha de presentación efectiva de o después del 16 de marzo de 2013.
NOTA: Al proveer esta declaración bajo 37 CFR 1.55 o 1.78, esta solicitud, con una fecha de presentación de o después del 16 de marzo de 2013, será examinada bajo el primer inventor para presentar provisiones de la AIA.

Hoja Técnica de la Solicitud 37 CFR 1.76	Número de Expediente	NABORS.015015
	Número de Solicitud	
Título de la Invención	EQUIPO DE PERFORACIÓN DE MOVIMIENTO CONTINUO CON HONDA DE MONTAJE LATERAL	

Autorización para Permitir Acceso:

☒ Autorización para Permitir el Acceso a la Solicitud por las Oficinas Participantes.

Si se selecciona, el abajo firmante otorga a la USPTO la autoridad para proporcionar a la Oficina Europea de Patentes (EPO), la Oficina de Patentes de Japón (JPO), la Oficina Coreana de Propiedad Intelectual (KIPO), Oficina Estatal de Propiedad Intelectual de la República Popular China (SIPO), Organización Mundial de la Propiedad Intelectual (OMPI) y cualquier otra oficina extranjera de propiedad intelectual en la que se presenta una solicitud extranjera que reivindica prioridad en la solicitud de patente instantánea acceso a la solicitud de patente instantánea. Ver 37 CFR 1.14(c) y (h). Esta casilla no debería ser seleccionada si el solicitante no desea que la EPO, JPO, KIP, OMPI u otra oficina de propiedad intelectual en la que se presenta una solicitud extranjera que reivindica prioridad en la solicitud de patente instantánea tenga acceso a la solicitud de patente instantánea.

De acuerdo con 37 CFR 1.14(h)(3), acceso será dado a una copia de la solicitud de patente instantánea con respecto a: 1) la solicitud de patente instantánea como se presenta; 2) cualquier solicitud extranjera en la que la solicitud de patente instantánea reivindique prioridad bajo 35 U.S.C. 119 (a)-(d) si un copia de la solicitud extranjera que satisface el requisito de copia certificada de 37 CFR 1.55 ha sido presentada con la solicitud de patente instantánea; 3) cualquier solicitud de EE.UU. como se presenta de la cual se busca beneficio en la solicitud de patente instantánea.

De acuerdo con 37 CFR 1.14(c), se podrá dar acceso a información relacionada con la fecha de presentación de esta Autorización.

Información del Solicitante

El suministro de información sobre el traspaso en esta sección no sustituye la necesidad de cumplir con ningún requisito de la parte 3 del Título 37 del CFR para que la Oficina registre un traspaso

Solicitante 1

Si el solicitante es el inventor (o el restante inventor o inventores conjunto bajo 37 CrR1.45), esta sección no debe ser completada. La información que se proporcionará en esta sección es el nombre y la dirección del representante legal que es el solicitante según 37 CFR 1.43; o el nombre y la dirección del cesionario, la persona a la que el inventor tiene la obligación de traspasar la invención, o la persona que, de lo contrario, muestra suficiente interés personal en su asunto, quién es el solicitante de acuerdo con 37 GFH 1.46. Si el solicitante es un solicitante de acuerdo con 37 CFR 1.46 (cesionario, persona a quien el inventor está obligado a traspasar, o persona entre otras; muestra un interés de propiedad suficiente) junto con uno o más inventores conjuntos, entonces el inventor o los inventores conjunto que también son el solicitante, debe ser identificado en esta sección.

Limpiar

☒ Cesionario	☐ Representante Legal bajo 35 U.S.C. 117	☐ Inventor Conjunto
☐ Persona a la que el inventor esta obligado a ceder		☐ Persona que muestra suficiente interés propietario

Si el solicitante es el representante legal, indique la autoridad para presentar la solicitud de patente, el inventor es:

Hoja Técnica de la Solicitud 37 CFR 1.76	Número de Expediente	NABORS.015015
	Número de Solicitud	
Título de la Invención	EQUIPO DE PERFORACIÓN DE MOVIMIENTO CONTINUO CON HONDA DE MONTAJE LATERAL	

Nombre del Difunto o Inventor Legalmente Incapacitado:			
Si el Solicitante es una Organización, seleccione aquí. ☒			
Nombre de la Organización		Nabors Drilling Technologies USA, Inc.	
Dirección de Envío para el Solicitante:			
Dirección 1		515 West Greens Road, Oficina 1000	
Dirección 2			
Ciudad	Houston	Estado/Provincia	TX
País	EE.UU.	Código Postal	77067
Teléfono		Número de Fax	
Correo Electrónico			
Datos adicionales del Solicitante pueden ser generados dentro de este formulario seleccionando el botón Agregar .			

Información del Cesionario incluyendo Información del Cesionario No-Solicitante:

El suministro de información sobre el traspaso en esta sección no sustituye la necesidad de cumplir con ningún requisito de la parte 3 del Título 37 del CFR para que la Oficina registre un traspaso.				
Cesionario 1				
Complete esta sección si desea incluir la información del cesionario, incluyendo la información del cesionario no-solicitante, en la publicación de la solicitud de patente. Un cesionario-solicitante identificado en la sección de "Información del Solicitante" aparecerá en la publicación de la solicitud de patente como un solicitante. Para un cesionario-solicitante, complete esta sección sólo si se desea también que la identificación como cesionario esté en la publicación de la solicitud de patente.				
Prefijo	Primer Nombre	Segundo Nombre	Apellido	Sufijo
Información de Dirección de Envío para el Cesionario incluyendo Cesionario No-Solicitante:				
Dirección 1				
Dirección 2				
Ciudad		Estado/Provincia		
País		Código Postal		

Hoja Técnica de la Solicitud 37 CFR 1.76		Número de Expediente	NABORS.015015
		Número de Solicitud	
Título de la Invención		EQUIPO DE PERFORACIÓN DE MOVIMIENTO CONTINUO CON HONDA DE MONTAJE LATERAL	
Teléfono			Número de Fax
Correo Electrónico			
Datos adicionales del Cesionario o del Cesionario No-Solicitante pueden ser generados dentro de este formulario seleccionando el botón Agregar .			

Firma:

NOTA: Este formulario debe firmarse de acuerdo con 37 CFR 1.33. Consulte 37 CFR 1.4(d) para conocer las formas de hacer firmas y certificaciones.					
Firma:		/Michael Locklar/		Fecha (YYYY-MM-DD)	2018-07-19
Primer Nombre	Michael	Apellido	Locklar	No. de Registro	44878
Firma Adicional puede ser generada dentro de este formulario seleccionando el botón Agregar .					

Esta colección de información es requerida por 37 CFR 1.76. La información es necesaria para obtener o retener un beneficio por parte del público el cual es presentar (y que la USPTO procese) una solicitud. La confidencialidad esta dictada por 35 U.S.C. 122 y 37 CFR 1.14. Se estima que esta colección toma 23 minutos para completar, incluyendo la recopilación, la preparación y el envío de los datos de solicitud completados a la USPTO. El tiempo variará dependiendo del caso individual. Cualquier comentario sobre la cantidad de tiempo que necesite para completar este formulario y/o sugerencias para reducir esta carga, debe enviarse al Director de Información, Oficina de Patentes y Marcas de los EE. UU., Departamento de Comercio de los EE. UU., Apartado de Correos 1450, Alexandria, VA 22313-1450. NO ENVÍE TARIFAS O. FORMULARIOS COMPLETADOS A ESTA DIRECCIÓN. **ENVIAR A: Comisionado de Patentes, Apartado de Correos 1450, Alexandria, VA 22313-1450.**

Declaración de la Ley de Privacidad

Ley de Privacidad de 1974 (P.L. 93-579) requiere que se le proporcione cierta información en relación con la presentación del formulario adjunto relacionado con una solicitud de patente o patente. En consecuencia, de conformidad con los requisitos de la Ley, tenga en cuenta que: (1) la autoridad general para la recopilación de esta información es 35 U.S.C. 2(b)(2); (2) el suministro de la información solicitada es voluntario; y (3) el propósito principal para el cual la información es utilizada por la Oficina de Patentes y Marcas de los Estados Unidos es procesar y/o examinar su presentación relacionada con una solicitud de patente o patente. Si no proporciona la información solicitada, es posible que la Oficina de Patentes y Marcas de EE. UU. no pueda procesar y/o examinar su presentación, lo que puede resultar en la finalización de los procedimientos o el abandono de la solicitud o la expiración de la patente.

La información proporcionada por usted en este formulario estará sujeta a los siguientes usos de rutina:

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2. Un registro de este sistema de registros puede ser revelado, como un uso rutinario, en el curso de la presentación de pruebas a un tribunal, magistrado o tribunal administrativo, incluidas las revelaciones al abogado contrario en el curso de las negociaciones de resolución.
3. Un registro en este sistema de registros puede ser revelado, como uso rutinario, a un Miembro del Congreso que presente una solicitud que involucre a una persona, a quien pertenece el registro, cuando la persona ha solicitado asistencia del Miembro con respecto al tema cuestión del expediente.
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5. Un registro en este sistema de registros relacionado con una Solicitud Internacional presentada conforme al Tratado de Cooperación de Patentes puede ser revelado, como uso rutinario, a la Oficina Internacional de la Organización Mundial de la Propiedad Intelectual, de conformidad con el Tratado de Cooperación de Patentes.
6. Un registro de este sistema de registros puede ser revelado, como uso rutinario, a otra agencia federal para propósitos de revisión de Seguridad Nacional (35 USC 181) y para revisión de conformidad con la Ley de Energía Atómica (42 USC 218 (c)).
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9. Un registro de este sistema de registros puede ser revelado, como un uso rutinario, a una agencia federal, estatal o local de aplicación de la ley, si la USPTO se entera de una violación o posible violación

EA 8009957

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

July 18, 2019

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: 62/700,704

FILING DATE: July 19, 2018

THE COUNTRY CODE AND NUMBER OF YOUR PRIORITY APPLICATION, TO BE USED FOR FILING ABROAD UNDER THE PARIS CONVENTION, IS US62/700,704

**By Authority of the
Under Secretary of Commerce for Intellectual Property
and Director of the United States Patent and Trademark Office**



W. Montgomery
W. MONTGOMERY
Certifying Officer

Electronic Acknowledgement Receipt

EFS ID:	33232074
Application Number:	62700704
International Application Number:	
Confirmation Number:	5101
Title of Invention:	SIDE SADDLE SLINGSHOT CONTINUOUS MOTION RIG
First Named Inventor/Applicant Name:	Ashish GUPTA
Customer Number:	100183
Filer:	Michael G. Locklar/Kimberly Wattner
Filer Authorized By:	Michael G. Locklar
Attorney Docket Number:	Nabors.015015
Receipt Date:	19-JUL-2018
Filing Date:	
Time Stamp:	17:54:23
Application Type:	Provisional

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$280
Confirmation Number	072018INTEFSW17550301
Deposit Account	505629
Authorized User	Kimberly Wattner

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	NABORS015015_ADS.PDF	1505225	no	7
			14bdb2008873b250a2d751288d1c6eb569963897		

Warnings:**Information:**

2		Nabors015015_Application.pdf	215841	yes	37
			8fc1e50a2b586c87623deadc8eed6ad692c75e75		

Multipart Description/PDF files in .zip description

Document Description		Start	End
Specification		1	24
Claims		25	36
Abstract		37	37

Warnings:**Information:**

3	Drawings-only black and white line drawings	Nabors015015_Drawings.pdf	5243190	no	34
			6454038c872333dd9c039c4cddbef787cd4fe06c		

Warnings:**Information:**

4	Power of Attorney	POA.PDF	133003	no	1
			14820777216d6d658736a88c6d7a295612a764e3		

Warnings:**Information:**

5	Fee Worksheet (SB06)	fee-info.pdf	29815	no	2
			7f21aed6448d5ed13da07d908286b11c0b872fea		

Warnings:**Information:****Total Files Size (in bytes):**

7127074

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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.

UNITED STATES PROVISIONAL PATENT APPLICATION FOR:

SIDE SADDLE SLINGSHOT CONTINUOUS MOTION RIG

INVENTORS:

ASHISH GUPTA

(HOUSTON, TX)

PADIRA REDDY

(RICHMOND, TX)

DENVER LEE

(HOUSTON, TX)

ASSIGNEE:

NABORS DRILLING TECHNOLOGIES USA, INC.

SIDE SADDLE SLINGSHOT CONTINUOUS MOTION RIG

Technical Field/Field of the Disclosure

[0001] The present disclosure relates generally to drilling rigs, and specifically to rig structures for drilling in the petroleum exploration and production industry.

Background of the Disclosure

[0002] Land-based drilling rigs may be configured to be moved to different locations to drill multiple wells within the same area, traditionally known as a wellsite. In certain situations, the land-based drilling rigs may travel across an already-drilled well for which there is a well-head in place. Further, mast placement on land-drilling rigs may have an effect on drilling activity. For example, depending on mast placement on the drilling rig, an existing well-head may interfere with the location of land-situated equipment such as, for instance, existing wellheads, and may also interfere with raising and lowering of equipment needed for operations.

Summary

[0003] The present disclosure provides for a drilling rig. The drilling rig may include a rig floor having a V-door. The side of the rig floor including the V-door may define a V-door side of the rig floor. The V-door may have a V-door axis defined as perpendicular to the V-door side of the rig floor. The drilling rig may include a first support structure and a second support structure. The rig floor may be supported by the first and second support structures. The rig floor, first support structure, and second support structure may form a trabeated structure. An open space between the first and second support structures and below the rig floor may define a traverse corridor having a traverse corridor axis. The traverse corridor axis may be perpendicular to the V-door axis. The drilling rig may include a mast mechanically coupled to one or more of the rig floor, the first support structure, or the second support structure at one or more mast mounting

points. The mast may include a frame having an open side defining a mast V-door side aligned with the V-door. The mast may include one or more racks coupled to the frame at the V-door side. The drilling rig may include a lower drilling machine (LDM) coupled to and moveable vertically relative to the mast. The drilling rig may include a continuous drilling unit (CDU) mechanically coupled to the LDM. The drilling rig may include an upper drilling machine (UDM) coupled to and moveable vertically relative to the mast. The drilling rig may include an upper mud assembly (UMA) coupled to and moveable vertically relative to the mast. The UMA may include a drilling mud supply pipe adapted to supply drilling fluid to a tubular member gripped by the UDM defining an upper flow path.

[0004] The present disclosure also provides for a method. The method may include positioning a drilling rig at a wellsite. The drilling rig may include a rig floor having a V-door. The side of the rig floor including the V-door may define a V-door side of the rig floor. The V-door may have a V-door axis defined as perpendicular to the V-door side of the rig floor. The drilling rig may include a first support structure and a second support structure. The rig floor may be supported by the first and second support structures. The rig floor, first support structure, and second support structure may form a trabeated structure. An open space between the first and second support structures and below the rig floor may define a traverse corridor having a traverse corridor axis. The traverse corridor axis may be perpendicular to the V-door axis. The drilling rig may include a mast mechanically coupled to one or more of the rig floor, the first support structure, or the second support structure at one or more mast mounting points. The mast may include a frame having an open side defining a mast V-door side aligned with the V-door. The mast may include one or more racks coupled to the frame at the V-door side. The drilling rig may include a lower drilling machine (LDM) coupled to and moveable vertically relative to the

mast. The drilling rig may include a continuous drilling unit (CDU) mechanically coupled to the LDM. The drilling rig may include an upper drilling machine (UDM) coupled to and moveable vertically relative to the mast. The drilling rig may include an upper mud assembly (UMA) coupled to and moveable vertically relative to the mast. The UMA may include a drilling mud supply pipe adapted to supply drilling fluid to a tubular member gripped by the UDM defining an upper flow path. The method may also include continuously drilling a wellbore using the drilling rig.

Brief Description of the Drawings

[0005] The present disclosure is best understood from the following detailed description when read with the accompanying figures. It is emphasized that, in accordance with the standard practice in the industry, various features are not drawn to scale. In fact, the dimensions of the various features may be arbitrarily increased or reduced for clarity of discussion.

[0006] FIGS. 1-3 depict perspective views of a drilling rig consistent with at least one embodiment of the present disclosure.

[0007] FIG. 4 depicts an elevation view of the V-door side of the drilling rig of FIGS. 1-3.

[0008] FIG. 5 depicts an elevation view of the driller's cabin side of the drilling rig of FIGS. 1-3.

[0009] FIG. 6 depicts an elevation view of the back of the drilling rig of FIGS. 1-3.

[0010] FIG. 7 depicts an elevation view of the off-driller's side of the drilling rig of FIGS. 1-3.

[0011] FIG. 8 depicts a top view of the drilling rig of FIGS. 1-3.

[0012] FIG. 9 depicts a cutaway top view of the support structures of the drilling rig of FIGS. 1-3.

[0013] FIG. 10 depicts a partial side view of the mast and secondary mast of the drilling rig of FIGS. 1-3.

[0014] FIG. 11 depicts a cross-section view of a continuous drilling unit (CDU) consistent with at least one embodiment of the present disclosure.

[0015] FIGS. 12-21A depict the drilling rig of FIG. 1 in various stages of a continuous drilling operation.

Detailed Description

[0016] It is to be understood that the following disclosure provides many different embodiments, or examples, for implementing different features of various embodiments. Specific examples of components and arrangements are described below to simplify the present disclosure. These are, of course, merely examples and are not intended to be limiting. In addition, the present disclosure may repeat reference numerals and/or letters in the various examples. This repetition is for the purpose of simplicity and clarity and does not in itself dictate a relationship between the various embodiments and/or configurations discussed.

[0017] FIGS. 1-10 depict perspective views of drilling rig 10. Drilling rig 10 may be positioned in wellsite 5. Wellsite 5 may include one or more wellheads 7. In some instances, wellheads 7 may be arranged in a linear fashion along wellsite 5. Each wellhead 7 may be the upper end of a wellbore extending into the Earth below or may represent a location at which such a wellbore will be drilled by drilling rig 10. In some embodiments, each wellhead 7 may include one or

more components such as Christmas tree 8 or blowout preventer (BOP) 9. In some embodiments, as further discussed herein below, drilling rig 10 may be adapted to travel within wellsite 5 to, for example and without limitation, be used with each wellhead 7 in a drilling operation or otherwise.

[0018] Drilling rig 10 may include rig floor 12 and one or more support structures 14. Support structures 14 may be positioned to support rig floor 12 and other components of drilling rig 10 as further discussed below above ground level. In some embodiments, support structures 14 may include components to allow drilling rig 10 to be travelled through wellsite 5 as further discussed herein below.

[0019] In some embodiments, support structures 14 may be arranged such that support structures 14 and rig floor 12 form a trabeated structure. The open space between support structures 14 and below rig floor 12 may define at least one traverse corridor 16, indicated by traverse corridor axis 18 in FIGS. 1-10. In some embodiments, drilling rig 10 may be oriented such that traverse corridor axis 18 is substantially aligned with wellheads 7 of wellsite 5. In such an arrangement, as drilling rig 10 travels through wellsite 5 along the line of wellheads 7, such as, for example and without limitation, to move from drilling a first wellhead 7 to drill a second wellhead 7, drilling rig 10 may travel linearly in the direction of traverse corridor axis 18. Because no fixed components of support structures 14 or rig floor 12 are positioned in traverse corridor 16, drilling rig 10 may not interfere with any components of wellheads 7 such as, for example and without limitation, Christmas tree 8. In some embodiments, as depicted in FIGS. 1-10, drilling rig 10 may include two support structures 14 that define a single traverse corridor 16. In some embodiments, drilling rig 10 may include a larger number of support structures 14 arranged to define two or more traverse corridors 16, each having a separate traverse corridor axis 18 along

which drilling rig 10 may linearly travel and avoid interference with any components of wellheads 7.

[0020] In some embodiments, rig floor 12 may include V-door 20. V-door 20 may be an open portion of one side of rig floor 12 through which tubular members such as casing, drill pipe, or other tools are passed when lifted into or lowered out of drilling rig 10. V-door 20 may be a physical opening in rig floor 12 or may be a designated area of rig floor 12 otherwise without other equipment that would impede the movement of tubular members and other tools. In some embodiments, tubular members may be introduced to drilling rig 10 using carrier 22 of catwalk system 24. Carrier 22, or other corresponding structure such as a slide, of catwalk system 24 may mechanically couple to the side of rig floor 12 that includes V-door 20, defined as V-door side 26 of rig floor 12. Catwalk system 24 may be used to store tubular members and other tools at the ground level before the tubular members and other tools are introduced to drilling rig 10 through V-door 20. In some embodiments, carrier 22 and catwalk system 24 may extend from V-door 20 of rig floor 12 in a direction substantially perpendicular to V-door side 26 of rig floor 12, the direction defining V-door axis 28. In some embodiments, rig floor 12 and support structures 14 may be positioned such that V-door axis 28 is substantially perpendicular to traverse corridor axis 18. In such an arrangement, catwalk system 24 is positioned at a location in wellsite 5 adjacent to drilling rig 10 but not in line with the line of wellheads 7, therefore avoiding interference between catwalk system 24 and wellheads 7.

[0021] In some embodiments, each support structure 14 may be adapted to be moved between a raised position and a lowered position. In such an embodiment, rig floor 12 and other components of drilling rig 10 coupled thereto may be moved between a raised position and a lowered position. In some embodiments, the raised position, as depicted in FIGS. 1-10, may be

used when drilling rig 10 is in operation such that sufficient clearance exists between the ground level and rig floor 12 to permit rig floor 12 to clear any equipment needed for a drilling operation, such as, for example and without limitation, BOP 9 positioned on wellhead 7. In some embodiments, the lowered position may be used when “rigging up” or “rigging down” drilling rig 10 after transportation or in preparation for transportation. Lowering rig floor 12 may, for example and without limitation, allow easier access to components of rig floor 12 or equipment or structures coupled to rig floor 12 from the ground level. In some embodiments, by lowering support structures 14, the overall height of support structures 14 may be reduced for transportation.

[0022] In some embodiments, each support structure 14 may include lower box 50. Lower box 50 may be in contact with the ground and may support the weight of the rest of support structure 14 and drilling rig 10. In some embodiments, each support structure 14 may include one or more support beams 52. Each support beam 52 may pivotably couple to lower box 50 at lower pivot point 54 and to rig floor 12 at upper pivot point 56. In some embodiments, support beams 52 may form linkages between lower box 50 and rig floor 12 that allow rig floor 12 to move between the lowered position and the raised position as support beams 52 pivot relative to lower box 50 and rig floor 12. In some embodiments, support beams 52 may be arranged such that rig floor 12 remains generally parallel to the ground during the transition between the lowered and raised positions. In such an embodiment, support beams 52, lower boxes 50, and rig floor 12 may correspond to links in a parallelogram linkage.

[0023] In some embodiments, one or more diagonal support beams 58 may extend between lower boxes 50 and rig floor 12 to, for example and without limitation, retain rig floor 12 in the raised position.

[0024] In some embodiments, support structures 14 may include one or more mechanisms for traveling drilling rig 10 through wellsite 5. For example and without limitation, in some embodiments, support structures 14 may include walking actuators 30 as most clearly depicted in FIG. 9. Walking actuators 30 may be positioned in lower boxes 50. In some embodiments, walking actuators 30 may be adapted to lift lower boxes 50 off the ground, move drilling rig 10 a short distance, and lower lower boxes 50 to the ground. By repeatedly actuating walking actuators 30 in this way, drilling rig 10 may be moved through wellsite 5. In some embodiments, walking actuators 30 may be used to move drilling rig 10 between wellheads 7. In some embodiments, walking actuators 30 may be used to move drilling rig 10 along traverse corridor axis 18. In some embodiments, walking actuators 30 may rotate, allowing walking actuators 30 to move drilling rig 10 in directions other than along traverse corridor axis 18.

[0025] In some embodiments, drilling rig 10 may include additional equipment mechanically coupled to rig floor 12, support structures 14, or both. For example, in some embodiments, one or more of driller's cabin 40 and choke house 42 may be positioned on or cantilevered from rig floor 12. In some embodiments, mud gas separator skid 44 and stair tower skid 46 may mechanically couple to rig floor 12 and extend vertically downward from rig floor 12 to the ground level. In some embodiments, hydraulic power unit skid 47 and accumulator skid 48 may mechanically couple to support structures 14 and may be cantilevered or otherwise supported by support structures 14. In some embodiments, additional equipment including, for example and without limitation, mud tanks, trip tanks, process tanks, mud process equipment, compressors, variable frequency drives, or drill line spoolers, may be coupled to drilling rig 10. In some embodiments, equipment coupled to drilling rig 10, including, for example and without limitation, driller's cabin 40, choke house 42, mud gas separator skid 44, stair tower skid 46,

hydraulic power unit skid 47, and accumulator skid 48, may travel with drilling rig 10 as it moves through wellsite 5. In some embodiments, drilling rig 10 may include one or more hoists or other equipment coupled to the lower side of rig floor 12 to transport BOP 9 with drilling rig 10 as it moves through wellsite 5.

[0026] In some embodiments, rig floor 12 may be moved between the raised and lowered position by one or more hydraulic cylinders. In some embodiments, hydraulic cylinders may extend between one or more lower boxes 50 and rig floor 12. In some embodiments, raising skid 70 may be mechanically coupled to drilling rig 10. In some embodiments, raising skid 70 may include raising skid base 72. Raising skid base 72 may mechanically couple to one or more of support structures 14. Raising skid 70 may include one or more raising actuators 74, which may be hydraulic cylinders coupled to raising skid base 72. Raising actuators 74 may be pivotably coupled to raising skid base 72. In some embodiments, raising actuators 74 may each be mechanically coupled to one or more corresponding drill floor raising points 76 of rig floor 12 by, for example and without limitation, a pin connection. Raising actuators 74 may be extended or retracted to move rig floor 12 to the raised or lowered position respectively. In some embodiments, raising skid 70 may be used to move mast 100 between a lowered position and a raised position as discussed further herein below. In some embodiments, raising skid 70 may be decoupled from drilling rig 10 once the desired raising or lowering operation is completed. In some embodiments, raising skid 70 may include one or more control units 78 for controlling operation of raising skid 70. In some embodiments, raising skid 70 may include hydraulic power unit 80 positioned to supply hydraulic pressure to extend or retract raising actuators 74.

[0027] Drilling rig 10 may include mast 100. Mast 100 may be mechanically coupled to rig floor 12 and/or support structures 14. In some embodiments, mast 100 may include one or more

upright structures that define frame 102 of mast 100. In some embodiments, mast 100 may be rectangular in cross section. In some embodiments, frame 102 of mast 100 may include an open side defining mast V-door side 104. In some embodiments, mast V-door side 104 may be substantially open such that tubular members and other tools introduced through V-door 20 of rig floor 12 may enter into mast 100 as they are lifted into drilling rig 10. Mast V-door side 104 may be oriented to face V-door axis 28 such that mast V-door side 104 is aligned with V-door 20 of rig floor 12.

[0028] In some embodiments, drilling rig 10 may include racking board 90. Racking board 90 may be mechanically coupled to mast 100. Racking board 90 may, for example and without limitation, be used to store tubular members in a vertical position on drilling rig 10. In some embodiments, racking board 90 may include one or more fingerboards 92 positioned to define slots 94 in racking board 90 into which tubular members may be positioned for storage. In some embodiments, fingerboards 92 may be arranged such that slots 94 extend radially from the open middle of racking board 90 such that tubular members may be positioned radially into racking board 90 relative to a position at the middle of racking board 90.

[0029] In some embodiments, drilling rig 10 may include pipe handler assembly 60. Pipe handler assembly 60 may include secondary mast 62. Secondary mast 62 may mechanically couple to rig floor 12. In some embodiments, secondary mast 62 may mechanically couple to mast 100. In some embodiments, pipe handler assembly 60 may be positioned on rig floor 12 at a location corresponding to V-door 20. Pipe handler assembly 60 may include pipe handler 64. Pipe handler 64 may include pipe gripper 66. Pipe gripper 66 may be mechanically coupled to secondary mast 62 by pipe handler arm 67. Pipe handler arm 67 may mechanically couple to pipe handler carriage 68. Pipe gripper 66 of pipe handler 64 may be used to grip a tubular

member or other tool from catwalk system 24 as the tubular member or other tool enters V-door 20. Pipe handler 64 may raise the tubular member or other tool by moving pipe gripper 66 and pipe handler arm 67 vertically by moving pipe handler carriage 68 relative to secondary mast 62. In some embodiments, pipe handler carriage 68 may include one or more motors 61 used to move pipe handler carriage 68 along secondary mast 62. In some embodiments, motors 61 may be used to rotate pinions 63 that engage with racks 65 coupled to secondary mast 62. In some embodiments, pipe handler 64 may position tubular members or other tools within drilling rig 10, such as, for example and without limitation, in line with well center within mast 100, into a storage position in racking board 90, or into alignment to be added to or removed from a drill string within the wellbore.

[0030] In some embodiments, mast 100 may include racks 106 mechanically coupled to frame 102. Racks 106 may be positioned on frame 102 of mast 100 at mast V-door side 104. Racks 106 may extend vertically substantially along the entire length of mast 100. Racks 106 may be used as part of one or more rack and pinion hoisting systems as further discussed herein below.

[0031] In some embodiments, mast 100 may be mechanically coupled to the rest of drilling rig 10 at one or more mast mounting points 108, 110. Mast mounting points 108, 110 may be coupled to rig floor 12 or may be coupled to support structures 14. In some embodiments, mast 100 may mechanically couple to mast mounting points 108, 110 by a pinned connection. In some embodiments, mast 100 may be pivotably coupled to a subset of mast mounting points 108, 110, such as mast mounting points 108, such that mast 100 may be pivotably raised or lowered when rigging up or down drilling rig 10, respectively. In some embodiments, mast 100 may be mechanically coupled to mast mounting points 108 in a lowered or horizontal arrangement. In some embodiments, mast 100 may be mechanically coupled to mast mounting points 108 when

rig floor 12 is in the lowered position. In some embodiments, mast 100 may be moved between the raised or vertical position and the lowered or horizontal position by raising skid 70. In some such embodiments, raising actuators 74 of raising skid 70 may each be mechanically coupled to one or more corresponding mast raising points 112 of mast 100 by, for example and without limitation, a pin connection. Raising actuators 74 may be extended or retracted to move mast 100 to the raised or lowered position respectively. In some embodiments, mast 100 may be lowered in a direction substantially parallel to traverse corridor axis 18 or substantially perpendicular to traverse corridor axis 18.

[0032] In some embodiments, mast 100 may be constructed from two or more mast subcomponents, depicted in FIGS. 1-10 as mast subcomponents 100a-d. In some embodiments, in order to transport mast 100, mast subcomponents 100a-d may be decoupled from each other when mast 100 is in the lowered position and may each be transported separately. In some embodiments, as discussed further below, one or more pieces of equipment coupled to mast 100 may remain in one or more of mast subcomponents 100a-d during transportation to, for example and without limitation, reduce the number of loads needed to be transported and reduce the time taken to rig up or rig down drilling rig 10. In some embodiments, mast subcomponents 100a-d may be mechanically coupled upon reaching wellsite 5 to form mast 100. In some embodiments, mast subcomponents 100a-d may be mechanically coupled using, for example and without limitation, pin connections 114.

[0033] In some embodiments, one or more drilling machines may be mechanically coupled to mast 100 and may be used to raise and lower a drill string being used to drill a wellbore, to rotate the drill string, to position tubular members or other tools to be added to or removed from the

drill string, and to make up or break out connections between tubular members. In some embodiments, such machines may include a top drive, elevator, or other hoisting mechanism.

[0034] In some embodiments, drilling rig 10 may include upper drilling machine (UDM) 121. UDM 121 may be used during a drilling operation to, for example and without limitation, raise and lower tubular members. As used herein, tubular members may include drill pipe, drill collars, casing, or other components of a drill string or components added to or removed from a drill string. In some embodiments, UDM 121 may include UDM clamps 123. UDM clamps 123 may be used, for example and without limitation, to engage a tubular member during a drilling operation. UDM 121 may be adapted to rotate the tubular member engaged by UDM clamps 123. In some embodiments, UDM 121 may include UDM slips 125. UDM slips 125 may be positioned to engage a tubular member to, for example and without limitation, allow UDM 121 to move the tubular member vertically relative to mast 100. In some embodiments, UDM 121 may include UDM pinions 127. UDM pinions 127 may engage racks 106 of mast 100. UDM pinions 127 may be driven by one or more motors including, for example and without limitation, hydraulic or electric motors, in order to move UDM 121 vertically along mast 100.

[0035] In some embodiments, mast 100 may include lower drilling machine (LDM) 131. LDM 131 may be used during a drilling operation to, for example and without limitation, raise and lower tubular members. As used herein, tubular members may include drill pipe, drill collars, casing, or other components of a drill string or components added to or removed from a drill string. In some embodiments, LDM 131 may include LDM clamps 133. LDM clamps 133 may be used, for example and without limitation, to engage a tubular member during a drilling operation. LDM 131 may be adapted to rotate the tubular member engaged by LDM clamps 133. In some embodiments, LDM 131 may include LDM slips 135. LDM slips 135 may be positioned

to engage a tubular member to, for example and without limitation, allow LDM 131 to move the tubular member vertically relative to mast 100. In some embodiments, LDM 131 may include LDM pinions 137. LDM pinions 137 may engage racks 106 of mast 100. LDM pinions 137 may be driven by one or more motors including, for example and without limitation, hydraulic or electric motors, in order to move LDM 131 vertically along mast 100.

[0036] Referring briefly to FIG. 12, in some embodiments, mast 100 may also include a continuous drilling unit (CDU) 161. CDU 161 may be mechanically coupled to the upper end of LDM 131. The construction and operation of CDU 161 are described further herein below.

[0037] Referring again to FIG. 2, in some embodiments, UDM 121 and LDM 131 may each be moved independently relative to mast 100. In some embodiments, UDM 121 and LDM 131 may be operated to make-up and break-out connections between tubular members during rig operations including, for example and without limitation, drilling, tripping in, and tripping out operations. In some embodiments, UDM 121 and LDM 131 may each be positioned such that tubulars supported or gripped by UDM 121 or by LDM 131 are aligned with the front of mast 100 and therefore aligned with racks 106 of mast 100.

[0038] In some embodiments, mast 100 may include upper mud assembly (UMA) 141. UMA 141 may include drilling mud supply pipe 143 adapted to supply drilling fluid to a tubular member gripped by UDM 121. Drilling mud supply pipe 143 may fluidly couple to the tubular member gripped by UDM 121 and may, for example and without limitation, be used to supply drilling fluid to a drill string during portions of a drilling operation. In some embodiments, UMA 141 may include mud assembly pinions 145 (shown in FIG. 12). Mud assembly pinions 145 may engage racks 106 of mast 100. In some embodiments, mud assembly pinions 145 may be driven

by one or more motors including, for example and without limitation, hydraulic or electric motors, in order to move UMA 141 vertically along mast 100. In other embodiments, UMA 141 may be moved by UDM 121. In other embodiments, UMA 141 may be moved using a separate hoist such as an air hoist. Such a hoist may include sheaves positioned on mast 100.

[0039] In some embodiments, in order to rig-down mast 100 for transport, components of mast 100 may be repositioned within mast 100 such that each is positioned within a specific mast subcomponents 100a-d as discussed below. The following discussion is meant as an example of such a rigging-down operation and is not intended to limit the scope of this disclosure as other arrangements of components and mast subcomponents are contemplated within the scope of this disclosure.

[0040] In such a rigging-down operation, any tubular members may be removed from all components of mast 100. In some embodiments, LDM 131 may be lowered into first mast subcomponent 100a. First mast subcomponent 100a may, in some embodiments, be the lowermost of mast subcomponents 100a-d. LDM 131 may be lowered using LDM pinions 137. In some embodiments, CDU 161 may be removed from LDM 131 and may be transported separately from the rest of mast 100.

[0041] In some embodiments, UDM 121 may be lowered into second mast subcomponent 100b. Second mast subcomponent 100b may, in some embodiments, be the second lowermost of mast subcomponents 100a-d. UDM 121 may be lowered using UDM pinions 127. In some embodiments, UMA 141 may be positioned within third mast subcomponent 100c. Third mast subcomponent 100c may, in some embodiments, be the third lowermost of mast subcomponents

100a-d. In some embodiments, UMA 141 may be positioned using one or more of UDM 121, UMA pinions 145, or another hoist such as an air hoist.

[0042] In some embodiments, mast subcomponents 100a-100d of mast 100 may be decoupled as discussed herein above, such that each mast subcomponent 100a-100d including any components of mast 100 positioned therein may be transported separately. Each mast subcomponent 100a-100d may be transported, for example and without limitation, by a truck-drawn trailer. In such an embodiment, first mast subcomponent 100a may be transported with LDM 131, second mast subcomponent 100b may be transported with UDM 121, and third mast subcomponent 100c may be transported with UMA 141. In some embodiments, the lengths of each mast subcomponent 100a-100d may be selected such that the overall weight of the transported section is within a desired maximum weight. In some embodiments, the lengths of each mast subcomponent 100a-100d may be selected such that the lengths and weights thereof comply with one or more transportation regulations including, for example and without limitation, permit load ratings. In some embodiments, such an arrangement may allow components that would otherwise be too heavy to transport as a single load to be separated into multiple loads.

[0043] In some embodiments, CDU 161 may be mechanically coupled to an upper end of LDM 131 once mast 100 is fully rigged up to drilling rig 10. As depicted in cross section in FIG. 11, CDU 161 may include lower seal housing 163. Lower seal housing 163 may mechanically couple CDU 161 to LDM 131. Lower seal 165 may be positioned within lower seal housing 163 and may be positioned to seal against an upper end of a tubular member 200. In some embodiments, tubular member 200 may be the uppermost tubular member of a drill string. In some embodiments, lower seal 165 may be positioned to seal against tubular member 200 while tubular member 200 is gripped by one or both of LDM clamps 133 and LDM slips 135 (not

shown in FIG. 11) during a drilling operation. Lower seal housing 163 may mechanically couple to circulation housing 167. Circulation housing 167 may include one or more fluid inlets 169 positioned to allow drilling fluid to enter the interior of circulation housing 167 and flow into tubular member 200, defining a lower flow path.

[0044] Circulation housing 167 may mechanically couple to valve housing 171. Valve housing 171 houses valve 173 positioned to, when closed, isolate the interior of CDU 161 below valve 173, defining lower chamber 175, from the interior of CDU 161 above valve 173, defining upper chamber 177. Lower chamber 175 may be defined between valve 173 and lower seal 165 and may be in fluid communication with inlets 169. Valve 173 may, in some embodiments, be a flapper valve.

[0045] Valve housing 171 may mechanically couple to outer extension barrel 179. Outer extension barrel 179 may be positioned about inner extension barrel 181. Inner extension barrel 181 may slide telescopically within outer extension barrel 179 between a retracted configuration (as shown in FIG. 11) and an extended configuration as further discussed below.

[0046] The upper end of inner extension barrel 181 may be mechanically coupled to inverted slips assembly 183. Inverted slips assembly 183 may include slips bowl 185 and one or more wedges 187 positioned to grip to a tubular member as further discussed below. Inner extension barrel 181 may also be mechanically coupled to upper seal 189. Upper seal 189 may be positioned to seal against the outer surface of a tubular member held by inverted slips assembly 183. Upper seal 189 may define an upper end of upper chamber 177. In some embodiments, lower seal housing 163, lower seal 165, circulation housing 167, valve housing 171, valve 173, outer extension barrel 179, inner extension barrel 181, inverted slips assembly 183, and upper

seal 189 may define a rotating portion of CDU 161 and may be rotated as a unit by rotation of a tubular member held by inverted slips assembly 183.

[0047] In some embodiments, CDU 161 may include a nonrotating outer housing assembly 191. Outer housing assembly 191 may include lower housing 193 and upper housing 195. Like lower seal housing 163, lower housing 193 may be mechanically coupled to LDM 131. Upper housing 195 may be coupled to lower housing 193 by one or more linear actuators 197 to move upper housing 195 axially relative to lower housing 193. In some embodiments, linear actuators 197 may be hydraulic pistons, electromechanical actuators, or any other suitable devices.

[0048] In some embodiments, lower seal housing 163, lower seal 165, circulation housing 167, valve housing 171, valve 173, and outer extension barrel 179 may be rotatably mechanically coupled to lower housing 193. In some embodiments, inner extension barrel 181, inverted slips assembly 183, and upper seal 189 may be mechanically coupled to upper housing 195. In some embodiments, one or more bearings may be positioned between components of the rotating portion of CDU 161 and components of outer housing assembly 191.

[0049] Upper housing 195 may be moved axially between an extended configuration and a retracted configuration to define an extended configuration and a retracted configuration of CDU 161. As upper housing 195 moves, inner extension barrel 181 moves relative to outer extension barrel 179 while maintaining a seal and thereby maintaining upper chamber 177.

[0050] During operation, a tubular member may be inserted into CDU 161 such that the lower end of the tubular member is positioned above valve 173 within upper chamber 177 while upper housing 195 is in the extended configuration and gripped by inverted slips assembly 183, and upper seal 189. Upper housing 195 may then be moved axially with respect to lower housing 193

to the retracted configuration, thereby pushing the lower end of the tubular member through valve 173 into lower chamber 175. In some embodiments, the lower end of the tubular member may be positioned into contact with tubular member 200 in order to make-up a threaded connection therebetween. Likewise, once a connection is broken out, upper housing 195 may be moved to the extended configuration, moving the lower end of an upper tubular member from lower chamber 175 into upper chamber 177, allowing valve 173 to close and isolate lower chamber 175 from upper chamber 177.

[0051] In some embodiments, drilling rig 10 with mast 100 as described above may be used during normal drilling operations including, for example and without limitation, conventional drilling, tripping in and out, or other operations. In some such embodiments, UDM 121 or LDM 131 may be used to hoist, position, and rotate a drill string. In some embodiments, UDM 121 and LDM 131 may be used to make up or break out pipe connections to add or remove tubular members from the drill string as discussed herein below with or without the use of UMA 141 and CDU 161. Pipe handler assembly 60 may be used to add or remove tubulars during such operations.

[0052] In some embodiments, drilling rig 10 may be used during a continuous drilling operation. In such an embodiment, UDM 121, LDM 131, UMA 141, and CDU 161 may be used to continuously circulate drilling fluid through the drill string during drilling operations without stopping or slowing the rotation of or penetration by the drill string into the subsurface formation during the addition of additional tubular members to the drill string.

[0053] For example, FIGS. 12-21 depict a continuous drilling operation consistent with embodiments of the present disclosure as further described below.

[0054] FIG. 12 depicts drilling rig 10 during a continuous drilling operation at a stage in the cycle at which UDM 121 is handling the drilling operation. In some embodiments, quill extension 151 may be positioned within UDM 121. Quill extension 151 may be engaged by UDM clamps 123 and UDM slips 125. Quill extension 151 may be coupled to UMA 141 such that UMA 141 allows drilling fluid to flow into quill extension 151, defining an upper flow path. As shown in FIG. 12, quill extension 151 is threadedly coupled to the upper end of drill string 201 such that rotation of quill extension 151 by UDM 121 is transferred to drill string 201 and such that drilling fluid from UMA 141 is circulated through drill string 201. In some embodiments, such as where drilling rig 10 is used for conventional drilling, UMA 141 may supply drilling fluid to drill string 201 directly. UDM 121 rotates drill string 201 at the desired drilling speed and moves downward as drill string 201 penetrates further into the subterranean formation. At this stage, LDM 131 and CDU 161 are not engaged with drill string 201. Specifically, LDM clamps 133, LDM slips 135, lower seal 165, inverted slips assembly 183, and upper seal 189 are disengaged from drill string 201. CDU 161 may be in the retracted configuration. Fluid supply from the lower flow path to inlets 169 is closed, and the weight of drill string 201 is supported by UDM 121.

[0055] As shown in FIGS. 13 and 13A, LDM 131 may be moved up to a position at which the upper end of drill string 201 is positioned within lower chamber 175 of CDU 161 while quill extension 151 extends through upper chamber 177 and into lower chamber 175 of CDU 161. LDM 131 may be moved downward such that this alignment is maintained despite downward motion of drill string 201 and UDM 121 during the drilling operation.

[0056] Once LDM 131 is so aligned, LDM 131 may begin to rotate LDM clamps 133 and LDM slips 135 at a speed to match the rotation of drill string 201, *i.e.* drilling speed. Once the rotation

rate is matched, LDM clamps 133 and LDM slips 135 may each be actuated to engage drill string 201. The weight of drill string 201 may thus be transferred from UDM 121 to LDM 131 while both engage drill string 201. Inverted slips assembly 183, and upper seal 189 may be actuated to engage quill extension 151 and lower seal 165 may be actuated to engage drill string 201 as shown in FIG. 13B. The rotating components of CDU 161 may be rotated by rotation of quill extension 151 at the drilling speed. The lower flow path may then be opened to introduce drilling fluid into upper chamber 177 and lower chamber 175 of CDU 161 through inlets 169, equalizing the pressure therein with the pressure in drill string 201 as shown in FIG. 13C.

[0057] The threaded connection between quill extension 151 and drill string 201 may then be broken-out. As LDM 131 rotates drill string 201 at the drilling speed, UDM 121 may slow rotation of quill extension 151 causing the threaded connection between drill string 201 and quill extension 151 to be broken-out as shown in FIGS. 14 and 14A. UDM 121 may move upward relative to LDM 131 to account for the disengagement of the threaded connection. Likewise, CDU 161 may partially extend to account for the disengagement of the threaded connection. In other embodiments, one or more vertical cylinders may be included as part of UDM 121 or LDM 131 to account for the disengagement of the threaded connection. Once drill string 201 is disconnected from quill extension 151, drilling fluid may enter drill string 201 from the lower flow path via inlets 169, and the upper flow path through UMA 141 may be closed. Rotation of quill extension 151 by UDM 121 may be halted once the connection is broken-out. At this point, LDM 131 bears all the weight and provides the rotational force on drill string 201.

[0058] CDU 161 may then fully extend such that the lower end of quill extension 151 moves upward out of lower chamber 175 and into upper chamber 177 of CDU 161 as shown in FIGS. 15 and 15A. Valve 173 may close, isolating lower chamber 175 from upper chamber 177. Upper

chamber 177 may be depressurized and fluid within upper chamber 177 and quill extension 151 may be drained. Inverted slips assembly 183 and upper seal 189 may be disengaged from quill extension 151 as shown in FIG. 15B. UDM 121 is disengaged from drill string 201 and may be moved to a raised position relative to mast 100 while LDM 131 runs the drilling operation as shown in FIG. 16.

[0059] Pipe handler assembly 60 may move a tubular to be added to drill string 201, defined as next drill pipe 203, into position and allow it to be threadedly coupled to the lower end of quill extension 151 as shown in FIG. 17. In some embodiments, the connection between quill extension 151 and next drill pipe 203 may be made-up by rotation of quill extension 151 by UDM 121. In other embodiments, pipe handler assembly 60 may rotate next drill pipe 203 relative to quill extension 151.

[0060] UDM 121 may move downward such that the lower end of next drill pipe 203 is stabbed into upper chamber 177 of CDU 161 as shown in FIGS. 18 and 18A. Inverted slips assembly 183 and upper seal 189 may be engaged against next drill pipe 203 as shown in FIG. 18B. The upper flow path through UDM 141 may be opened, introducing drilling fluid into upper chamber 177 of CDU 161 and equalizing the pressure within upper chamber 177 with the pressure within lower chamber 175 as shown in FIG. 18C.

[0061] CDU 161 may then be partially retracted, extending the lower end of next drill pipe 203 into lower chamber 175 and opening valve 173 as shown in FIGS. 19 and 19A.

[0062] A threaded connection between next drill pipe 203 and drill string 201 may then be made-up. UDM 121 may rotate quill extension 151 and next drill pipe 203 at a speed higher than the drilling speed at which drill string 201 is rotated by LDM 131, defining a make-up speed.

UDM 121 may lower and CDU 161 may be retracted as next drill pipe 203 is threadedly coupled to drill string 201 as shown in FIGS. 20 and 20A. Once the threaded connection is complete, UDM 121 may be slowed to rotate quill extension 151 and drill string 201—now including next drill pipe 203—at the drilling speed. The lower flow path through inlets 169 may be closed, and drilling fluid may be drained from upper chamber 177 and lower chamber 175 of CDU 161 as shown in FIG. 20B. The weight of drill string 201 may be transferred from LDM 131 to UDM 121 while both are engaged. UDM 121 and CDU 161 may then be disengaged from drill string 201 as shown in FIGS. 21 and 21A. Specifically, LDM clamps 133, LDM slips 135, lower seal 165, inverted slips assembly 183, and upper seal 189 may be disengaged from drill string 201. Rotation of LDM 131 may be halted. This operation may be repeated each time an additional drill pipe is to be added to drill string 201.

[0063] In some embodiments, a similar operation may be undertaken during trip-in or trip-out operations while maintaining continuous mud circulation or rotation of the drill string.

[0064] The foregoing outlines features of several embodiments so that a person of ordinary skill in the art may better understand the aspects of the present disclosure. Such features may be replaced by any one of numerous equivalent alternatives, only some of which are disclosed herein. One of ordinary skill in the art should appreciate that they may readily use the present disclosure as a basis for designing or modifying other processes and structures for carrying out the same purposes and/or achieving the same advantages of the embodiments introduced herein. One of ordinary skill in the art should also realize that such equivalent constructions do not depart from the spirit and scope of the present disclosure and that they may make various changes, substitutions, and alterations herein without departing from the spirit and scope of the present disclosure.

Claims:

1. A drilling rig comprising:

- a rig floor, the rig floor having a V-door, the side of the rig floor including the V-door defining a V-door side of the rig floor, the V-door having a V-door axis defined as perpendicular to the V-door side of the rig floor;
- a first support structure and a second support structure, the rig floor supported by the first and second support structures, the rig floor, first support structure, and second support structure forming a trabeated structure, an open space between the first and second support structures and below the rig floor defining a traverse corridor having a traverse corridor axis, wherein the traverse corridor axis is perpendicular to the V-door axis;
- a mast, the mast mechanically coupled to one or more of the rig floor, the first support structure, or the second support structure at one or more mast mounting points, the mast including a frame, the frame having an open side defining a mast V-door side, the mast V-door side aligned with the V-door, the mast including one or more racks coupled to the frame at the V-door side;
- a lower drilling machine (LDM), the LDM coupled to and moveable vertically relative to the mast;
- a continuous drilling unit (CDU), the CDU mechanically coupled to the LDM;

- an upper drilling machine (UDM), the UDM coupled to and moveable vertically relative to the mast; and
- an upper mud assembly (UMA), the UMA coupled to and moveable vertically relative to the mast, the UMA including a drilling mud supply pipe adapted to supply drilling fluid to a tubular member gripped by the UDM defining an upper flow path.
2. The drilling rig of claim 1, further comprising a third support structure, the first, second, and third support structures defining a second traverse corridor axis.
 3. The drilling rig of claim 1, wherein each of the first and second support structures comprises:
 - a lower box, the lower box in contact with the ground; and
 - a support beam, the support beam pivotably coupled to the lower box at a lower pivot point and to the rig floor at an upper pivot point, the support beams forming linkages between the lower box and the rig floor to allow the rig floor to move between a lowered position and a raised position as the support beams pivot relative to the lower box and the rig floor.
 4. The drilling rig of claim 3, wherein at least one of the first and second support structures further comprises a diagonal support beam extending between the lower box and the rig floor.
 5. The drilling rig of claim 3, further comprising one or more hydraulic cylinders adapted to move the rig floor between the lowered position and the raised position.

6. The drilling rig of claim 1, further comprising a racking board coupled to the mast, the racking board including one or more fingerboards positioned to define slots in the racking board into which tubular members may be positioned for storage in a vertical position on the drilling rig.
7. The drilling rig of claim 6, wherein the fingerboards are arranged such that the slots extend radially from an open middle of the racking board such that tubular members may be positioned radially into the racking board relative to a position at the middle of the racking board.
8. The drilling rig of claim 6, further comprising a pipe handler assembly:
9. The drilling rig of claim 8, wherein the pipe handler assembly comprises:
 - a secondary mast, the secondary mast mechanically coupled to the rig floor;
 - a pipe handler, the pipe handler including a pipe gripper, the pipe gripper mechanically coupled to the secondary mast by a pipe handler arm and pipe handler carriage, the pipe handler arm mechanically coupled to the pipe handler carriage.
10. The drilling rig of claim 1, wherein the mast is pivotably coupled to the mast mounting points by a pinned connection.
11. The drilling rig of claim 10, wherein the mast is movable between a vertical position and a horizontal position.

12. The drilling rig of claim 1, wherein the mast is constructed from two or more mast subcomponents, the mast subcomponents decouplable from each other when the mast is in a horizontal position.
13. The drilling rig of claim 1, wherein the support structures comprise one or more walking actuators adapted to move the drilling rig through a wellsite along the transverse corridor axis.
14. The drilling rig of claim 13, wherein the walking actuators are rotatable, such that walking actuators are adapted to move the drilling rig through the wellsite in multiple directions.
15. The drilling rig of claim 1, further comprising one or more of a mud tank, trip tank, process tank, mud process equipment, compressors, variable frequency drives, drill line spoolers, driller's cabin, choke house, mud gas separator skid, stair tower skid, hydraulic power unit skid, or accumulator skid is mechanically coupled to the rig floor or first or second support structures.
16. The drilling rig of claim 15, wherein a driller's cabin or choke house is positioned on or cantilevered from the rig floor.
17. The drilling rig of claim 15, wherein a mud gas separator skid and stair tower skid are mechanically coupled to the rig floor.
18. The drilling rig of claim 15, wherein a hydraulic power unit skid or accumulator skid is mechanically coupled to or cantilevered from the first or second support structures.
19. The drilling rig of claim 1, wherein the UDM comprises:

UDM clamps, the UDM clamps adapted to engage a tubular member to allow the UDM to rotate the tubular member; and

UDM slips, the UDM slips positioned to engage the tubular member to allow the UDM to move the tubular member vertically.

20. The drilling rig of claim 19, wherein the tubular member engaged by the UDM clamps and UDM slips are aligned with the racks of the mast.

21. The drilling rig of claim 1, wherein the LDM comprises:

LDM clamps, the LDM clamps adapted to engage a tubular member to allow the LDM to rotate the tubular member; and

LDM slips, the LDM slips positioned to engage the tubular member to allow the LDM to move the tubular member vertically.

22. The drilling rig of claim 21, wherein the tubular member engaged by the LDM clamps and LDM slips is aligned with the racks of the mast.

23. The drilling rig of claim 1, wherein the CDU comprises:

a lower seal, the lower seal positioned within a lower seal housing, the lower seal positioned to seal against an upper end of a first tubular member gripped by the LDM;

a circulation housing, the circulation housing mechanically coupled to the lower seal housing, the circulation housing including one or more fluid inlets positioned to allow drilling fluid to enter the interior of the circulation

housing and flow into the first tubular member, defining a lower flow path;

a valve, the valve positioned within a valve housing, the valve housing coupled to the circulation housing, the space within the lower seal housing, circulation housing, and valve housing between the lower seal and the valve defining a lower chamber;

an outer extension barrel mechanically coupled to the valve housing;

an inner extension barrel positioned within and adapted to slide telescopically within the outer extension barrel;

an upper seal mechanically coupled to the inner extension barrel, the upper seal positioned to seal against a lower end of a second tubular member, the space within the valve housing, outer extension barrel, and inner extension barrel between the valve and the upper seal defining an upper chamber;

an inverted slips assembly, the inverted slips assembly including a slips bowl and one or more wedges positioned to grip the second tubular member, the inverted slips assembly coupled to the inner extension barrel; and

one or more linear actuators positioned to telescopically extend or retract the inverted slips assembly and upper seal vertically relative to the valve housing.

24. A method comprising:

positioning a drilling rig at a wellsite, the drilling rig including:

- a rig floor, the rig floor having a V-door, the side of the rig floor including the V-door defining a V-door side of the rig floor, the V-door having a V-door axis defined as perpendicular to the V-door side of the rig floor;
- a first support structure and a second support structure, the rig floor supported by the first and second support structures, the rig floor, first support structure, and second support structure forming a trabeated structure, an open space between the first and second support structures and below the rig floor defining a traverse corridor having a traverse corridor axis, wherein the traverse corridor axis is perpendicular to the V-door axis;
- a mast, the mast mechanically coupled to one or more of the rig floor, the first support structure, or the second support structure at one or more mast mounting points, the mast including a frame, the frame having an open side defining a mast V-door side, the mast V-door side aligned with the V-door, the mast including one or more racks coupled to the frame at the V-door side;
- a lower drilling machine (LDM), the LDM coupled to and moveable vertically relative to the mast;
- a continuous drilling unit (CDU), the CDU mechanically coupled to the LDM;

an upper drilling machine (UDM), the UDM coupled to and moveable vertically relative to the mast; and

an upper mud assembly (UMA), the UMA coupled to and moveable vertically relative to the mast, the UMA including a drilling mud supply pipe adapted to supply drilling fluid to a tubular member gripped by the UDM defining an upper flow path; and

continuously drilling a wellbore using the drilling rig.

25. The method of claim 24, wherein:

the UDM comprises:

UDM clamps, the UDM clamps adapted to engage a tubular member to allow the UDM to rotate the tubular member; and

UDM slips, the UDM slips positioned to engage the tubular member to allow the UDM to move the tubular member vertically;

the LDM comprises:

LDM clamps, the LDM clamps adapted to engage a tubular member to allow the LDM to rotate the tubular member; and

LDM slips, the LDM slips positioned to engage the tubular member to allow the LDM to move the tubular member vertically; and

the CDU comprises:

a lower seal, the lower seal positioned within a lower seal housing, the lower seal positioned to seal against an upper end of a first tubular member gripped by the LDM;

a circulation housing, the circulation housing mechanically coupled to the lower seal housing, the circulation housing including one or more fluid inlets positioned to allow drilling fluid to enter the interior of the circulation housing and flow into the first tubular member, defining a lower flow path;

a valve, the valve positioned within a valve housing, the valve housing coupled to the circulation housing, the space within the lower seal housing, circulation housing, and valve housing between the lower seal and the valve defining a lower chamber;

an outer extension barrel mechanically coupled to the valve housing;

an inner extension barrel positioned within and adapted to slide telescopically within the outer extension barrel;

an upper seal mechanically coupled to the inner extension barrel, the upper seal positioned to seal against a lower end of a second tubular member, the space within the valve housing, outer extension barrel, and inner extension barrel between the valve and the upper seal defining an upper chamber;

an inverted slips assembly, the inverted slips assembly including a slips bowl and one or more wedges positioned to grip the second tubular member, the inverted slips assembly coupled to the inner extension barrel; and

one or more linear actuators positioned to telescopically extend or retract the inverted slips assembly and upper seal vertically relative to the valve housing.

26. The method of claim 25, wherein continuously drilling comprises:

engaging the first tubular member with the LDM clamps, LDM slips, and lower seal;

rotating the first tubular member with the LDM at a first speed, defined as a drilling speed;

closing the valve;

flowing drilling fluid into the first tubular member through the lower flow path;

extending the inverted slips assembly and upper seal vertically with the linear actuators;

engaging the second tubular member with the UDM clamps and UDM slips;

lowering the second tubular member into the CDU;

engaging the second tubular member with the inverted slips and upper seal;

rotating the second tubular member with the UDM at a higher speed than the drilling speed;

flowing fluid through the second tubular member through the upper flow path;

retracting the inverted slips assembly and upper seal with the linear actuators;

opening the valve;

threadedly coupling the first and second tubular members;

rotating the first and second tubular members at the drilling speed with the UDM;

disengaging the LDM clamps, LDM slips, lower seal, inverted slips, and upper seal;

moving the LDM vertically upward such that the LDM clamps are aligned with the top of the second tubular member;

engaging the LDM clamps, LDM slips, and lower seal to the second tubular member;

rotating the second tubular member with the LDM;

disengaging the second tubular member from the UDM; and

flowing drilling fluid through the second tubular member through the lower fluid path.

27. The method of claim 26, wherein the second tubular member is engaged to the UDM through a quill extension, the quill extension threadedly coupled to the upper end of the second tubular member.
28. The method of claim 27, wherein disengaging the second tubular member from the UDM comprises:
- engaging the quill extension with the inverted slips and the upper seal;
 - rotating the quill extension with the UDM at a slower speed than the drilling speed;
 - threadedly disengaging the quill extension from the second tubular member;
 - extending the inverted slips assembly and upper seal vertically with the linear actuators;
 - closing the valve; and
 - disengaging the quill extension with the inverted slips and the upper seal.

Abstract

A drilling rig includes a rig floor, first and second support structures, a mast, a lower drilling machine, a continuous drilling unit, an upper drilling machine, and an upper mast assembly. The rig floor includes a V-door defining a V-door axis extending perpendicularly from the side of the rig floor that includes the V-door. The first and second support structures define a traverse corridor having a traverse corridor axis, wherein the traverse corridor axis is perpendicular to the V-door axis. The drilling rig may be used for continuous drilling of a wellbore.

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 form PTO/AIA/82A.)

☒ 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 (form PTO/AIA/82A) or identified above:

OR

100183

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) 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 (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

☐ I recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☒ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

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Telephone	Email			

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

Nabors Drilling Technologies USA, Inc.

☐ Inventor or Joint Inventor (title not required below)

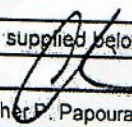
☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☒ 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		Date (Optional)	April 14, 2016
Name	Christopher P. Papouras		
Title	President - Nabors Drilling Solutions		

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.

Information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO 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 3 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 required 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 of 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.

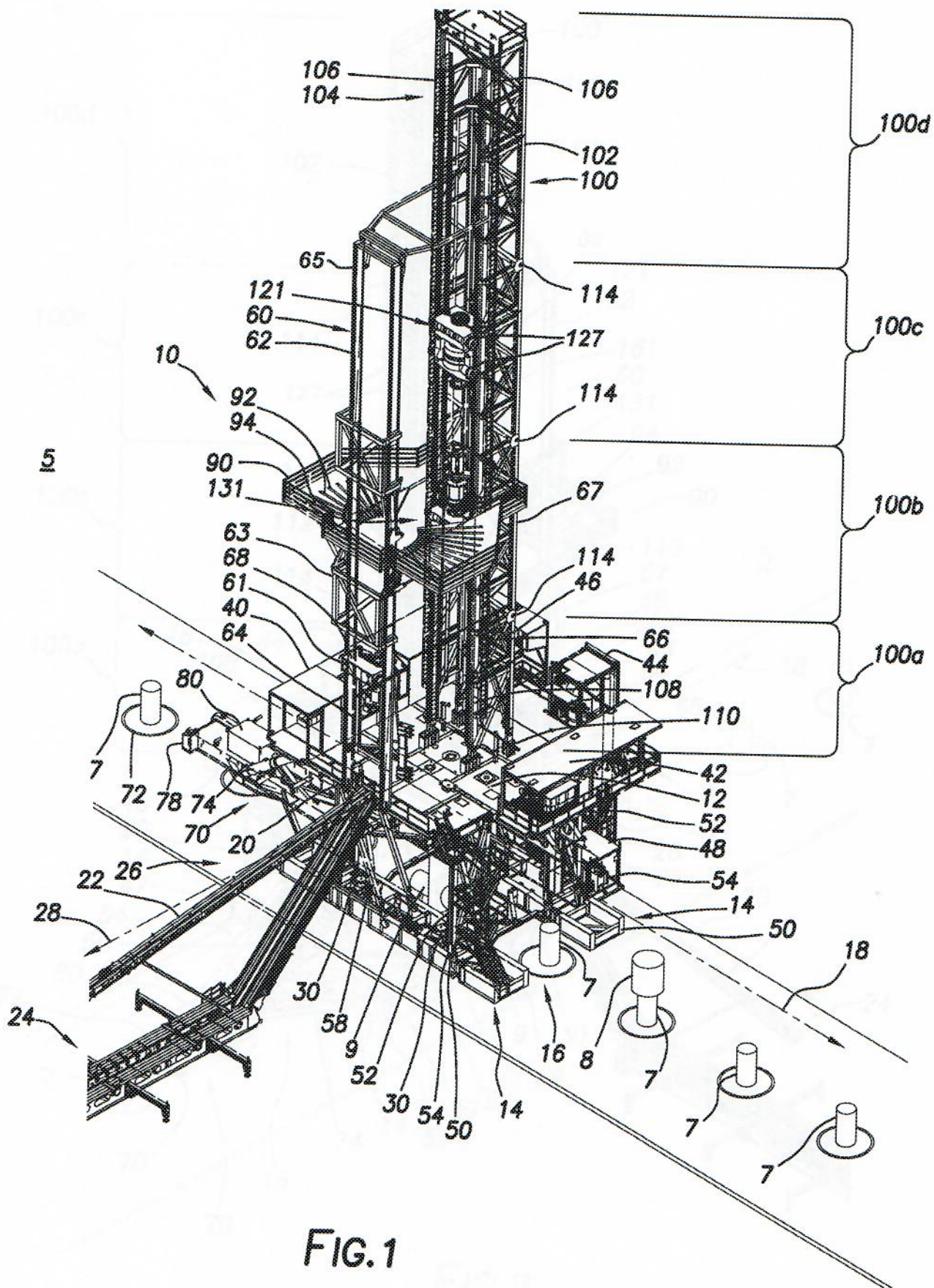


FIG. 1

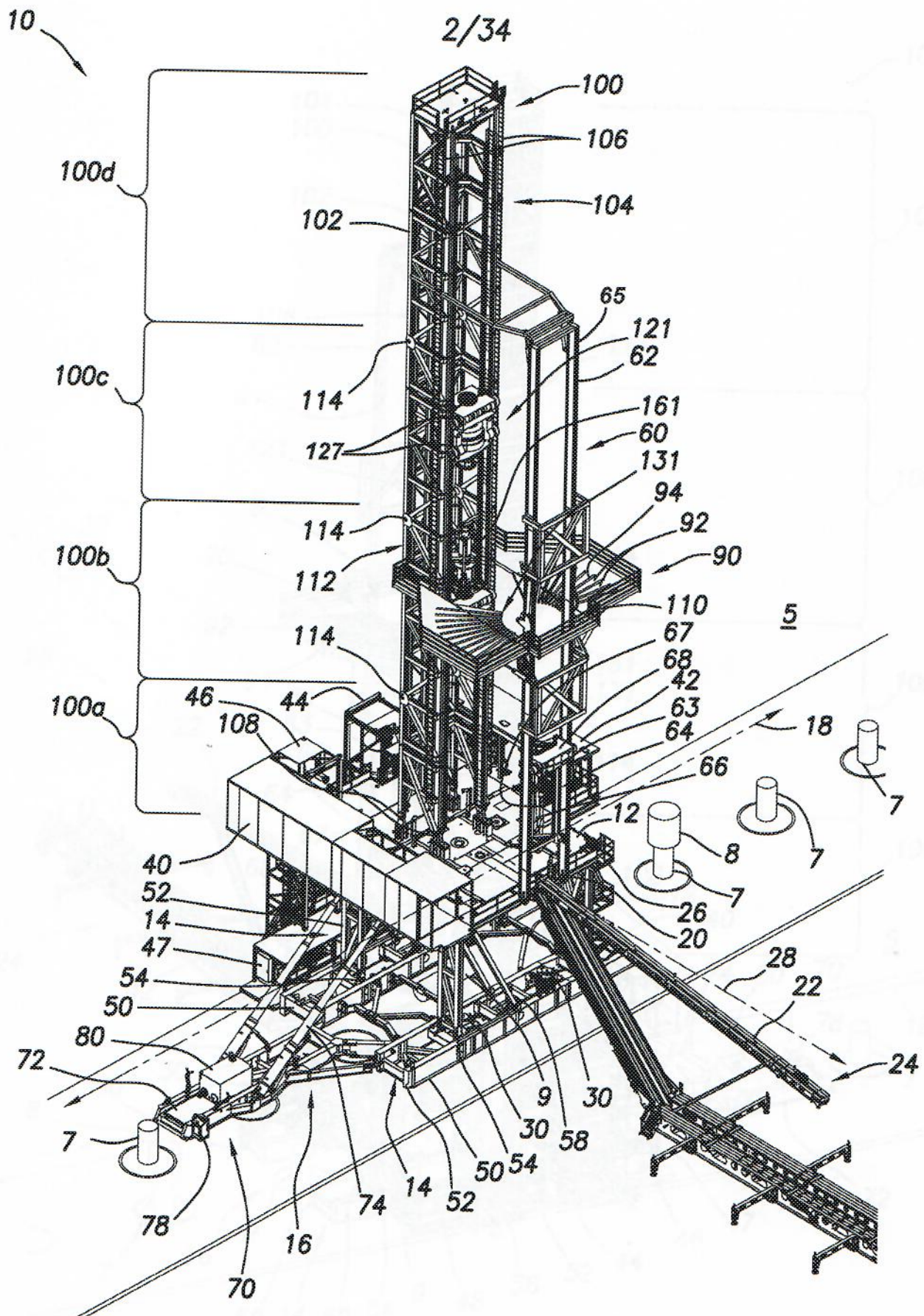


FIG.2

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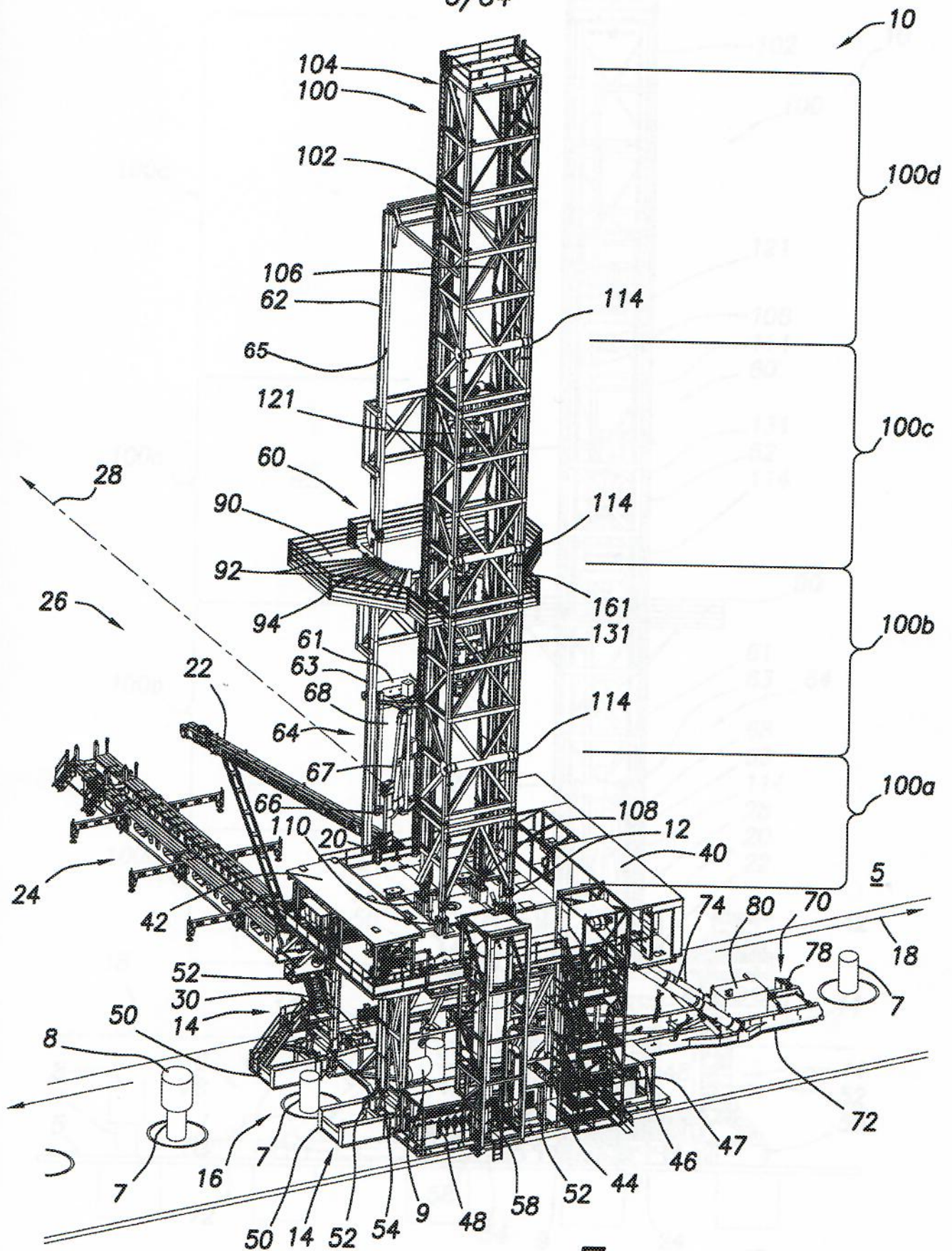


FIG. 3

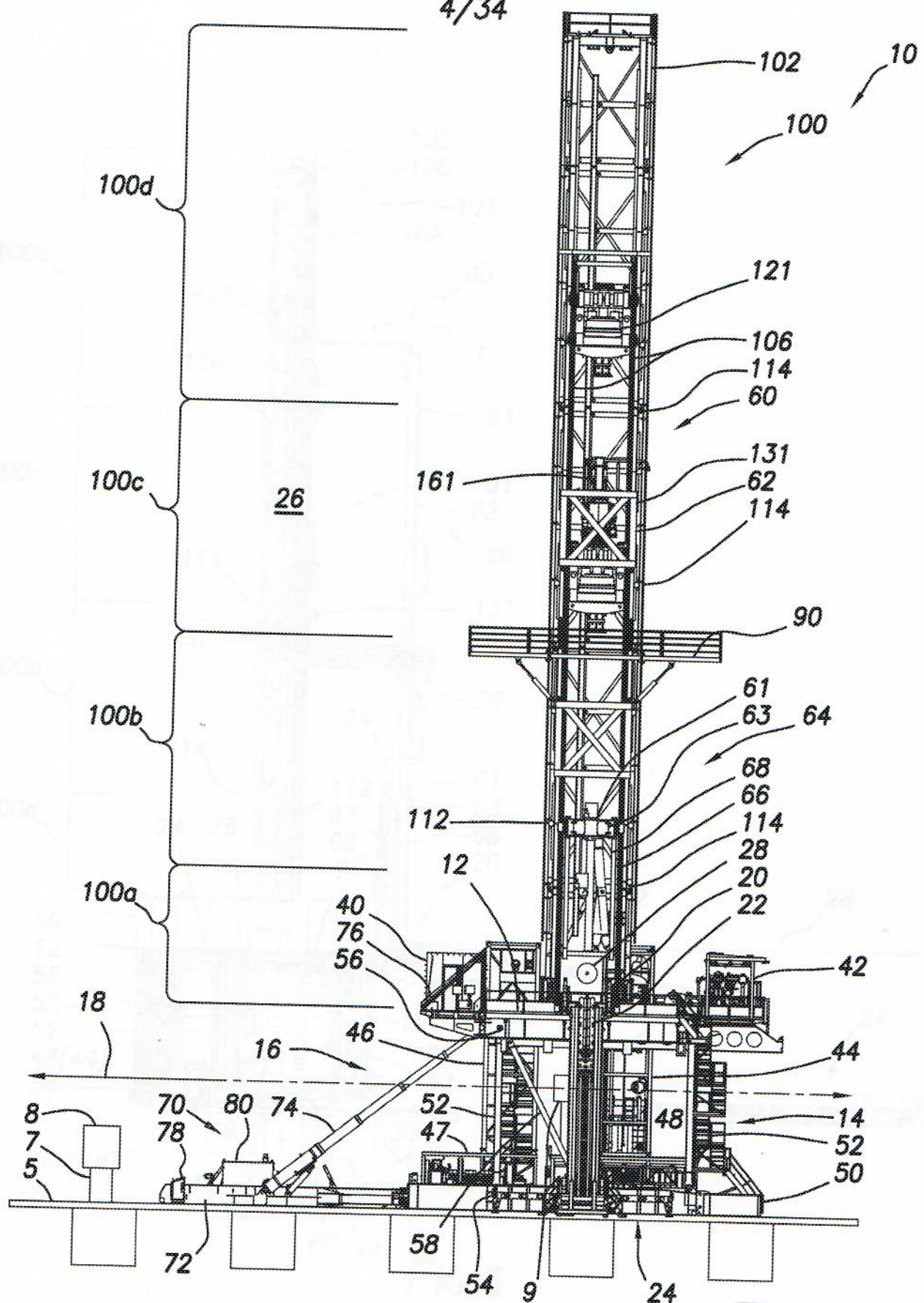


FIG. 4

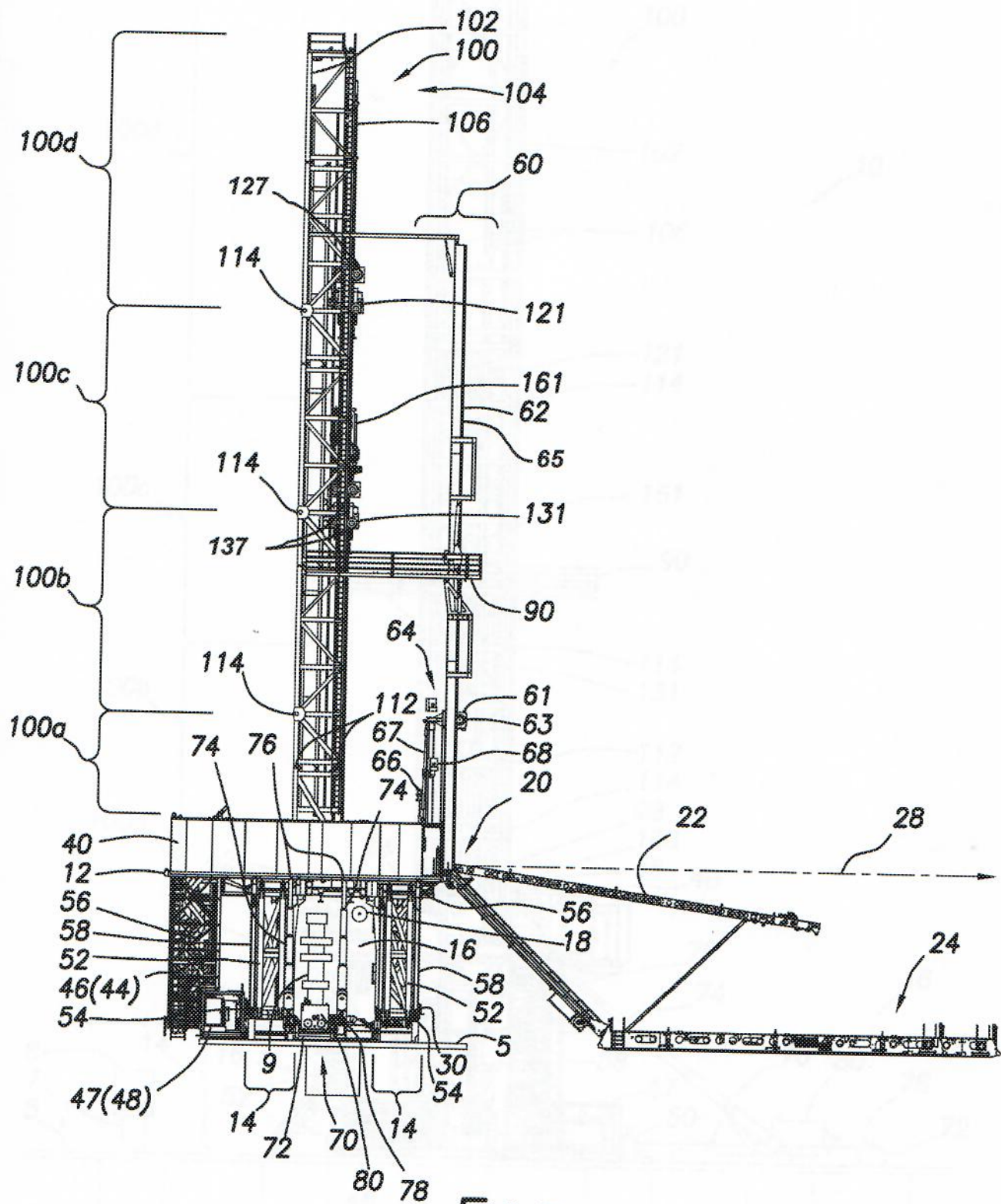


FIG. 5

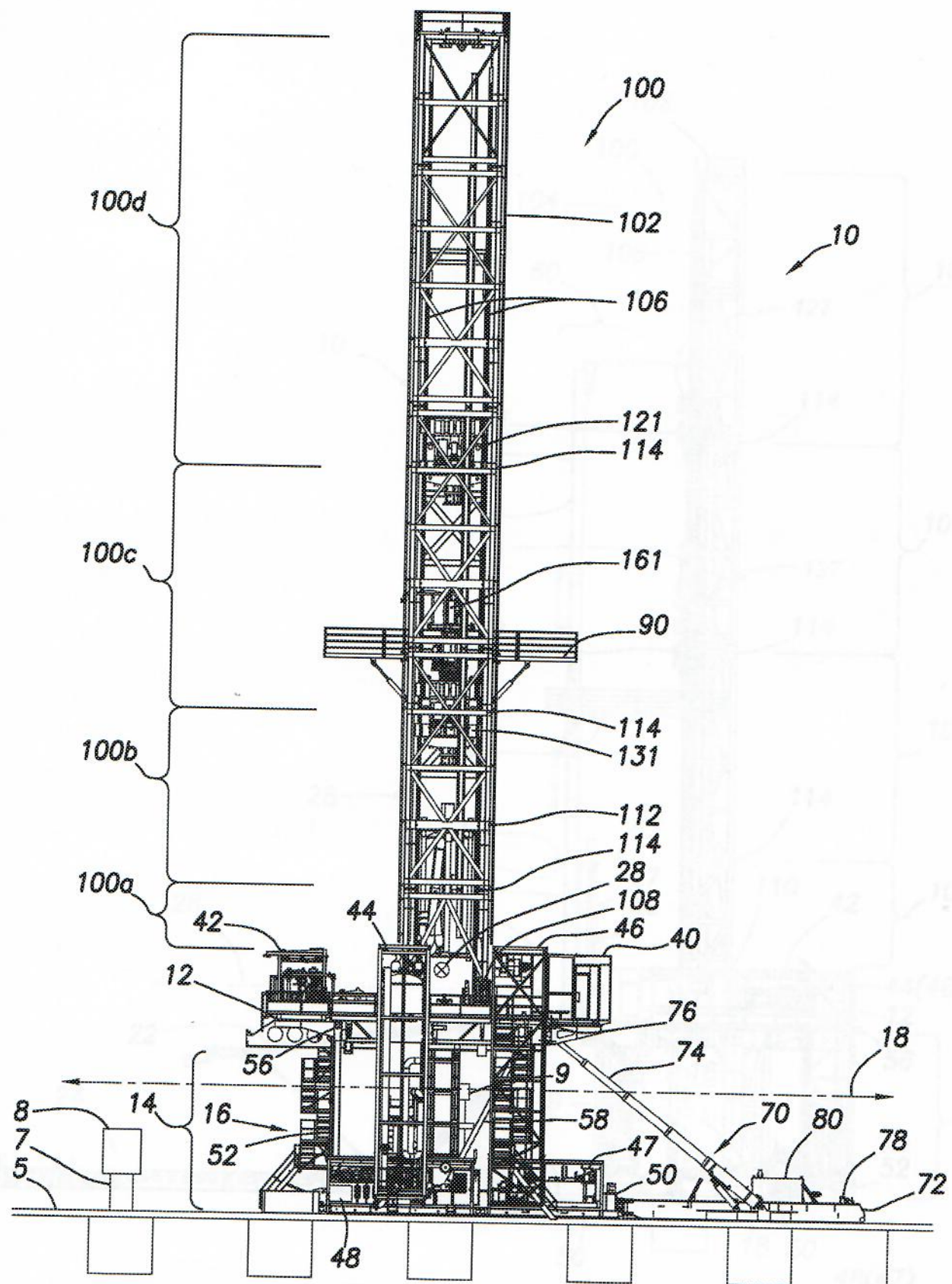


FIG. 6



FIG. 7

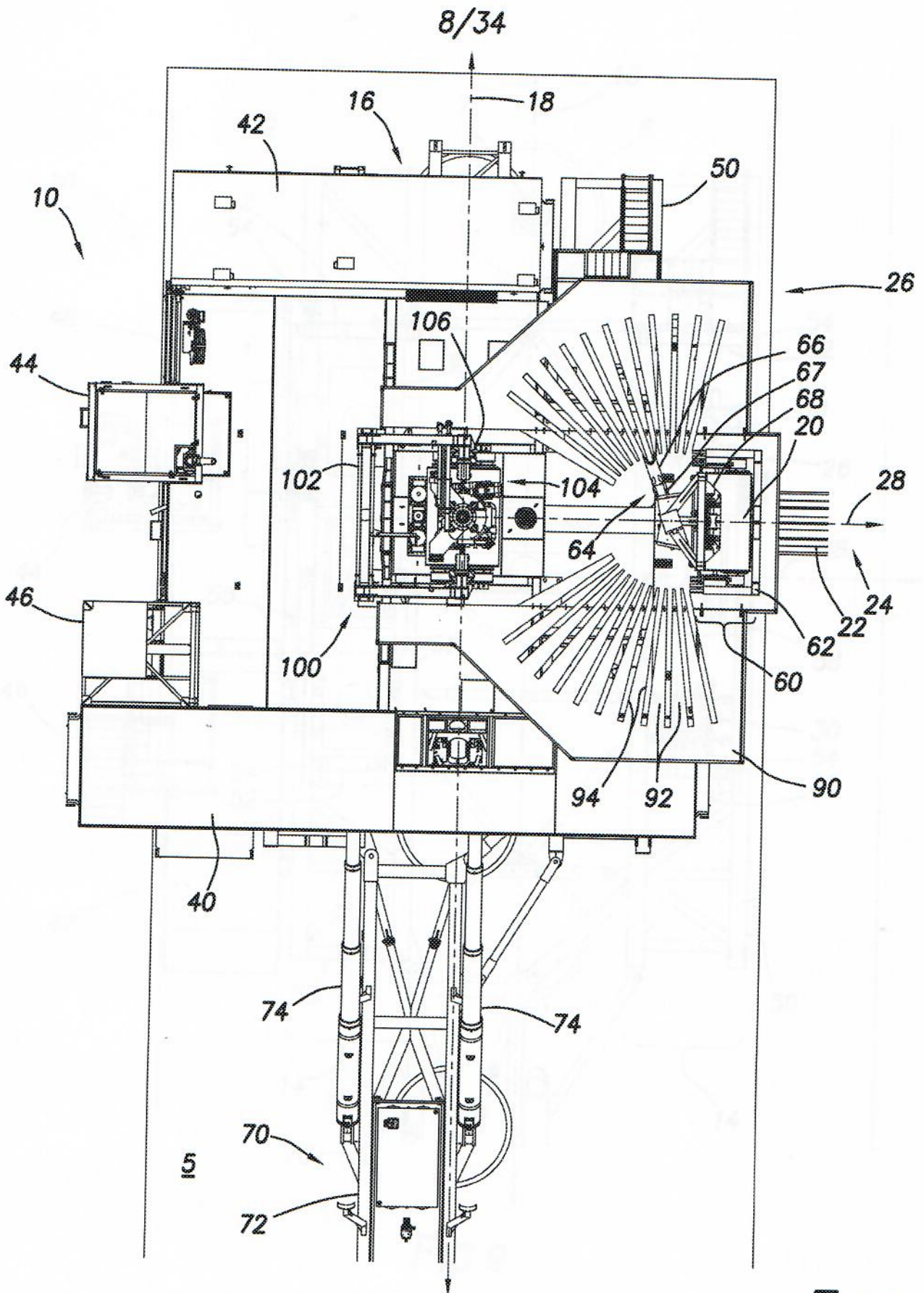


FIG. 8

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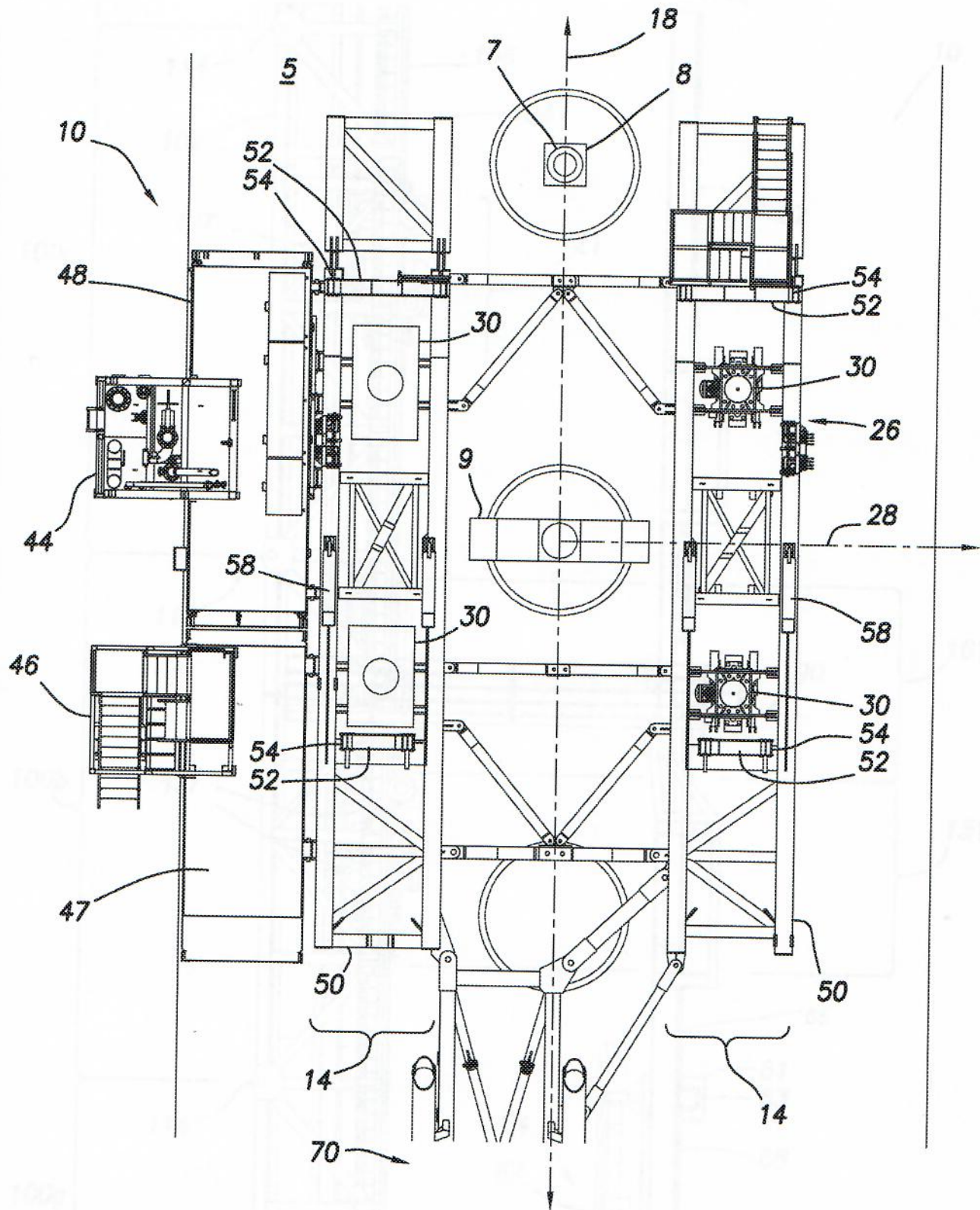


FIG. 9

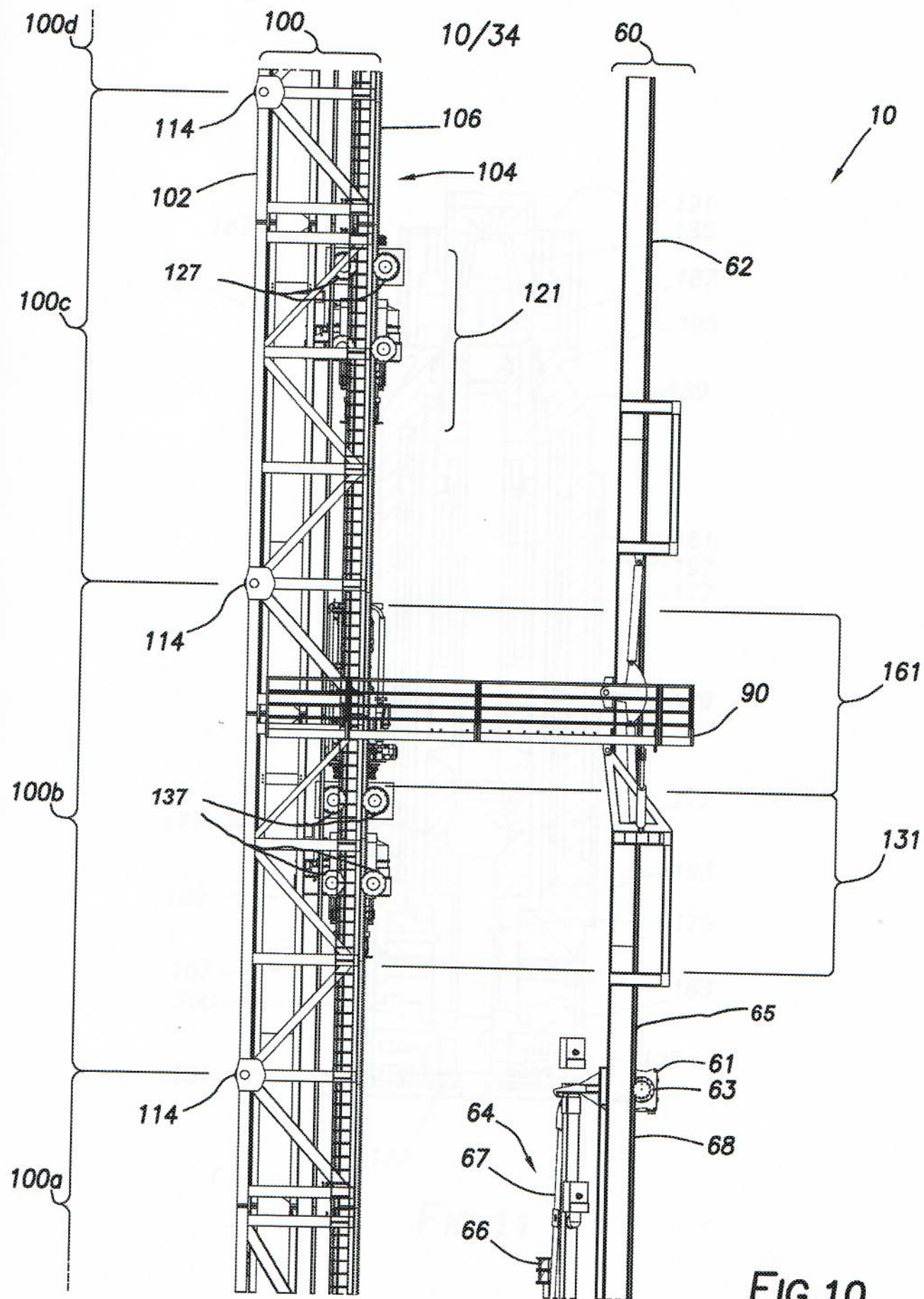


FIG.10

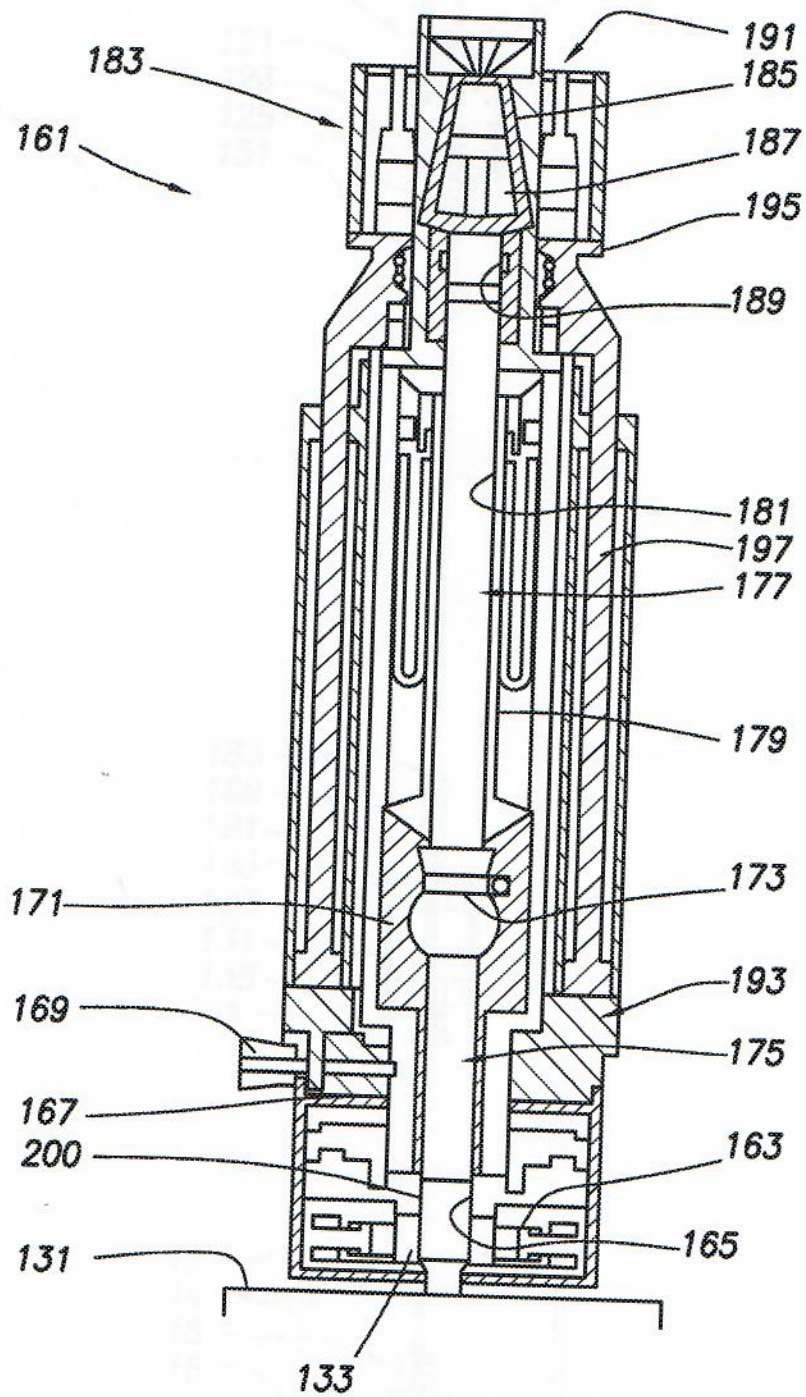


FIG. 11

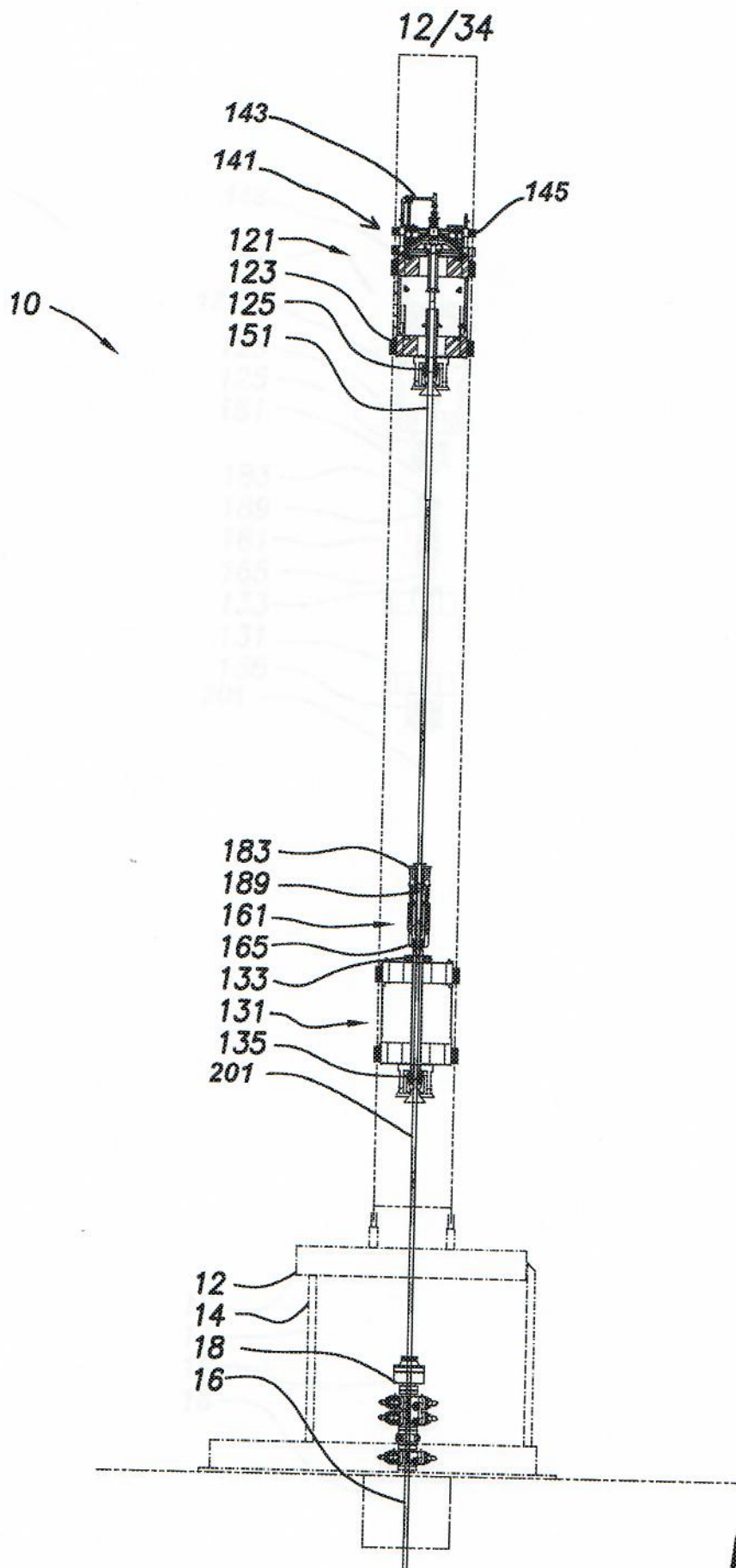


FIG. 12

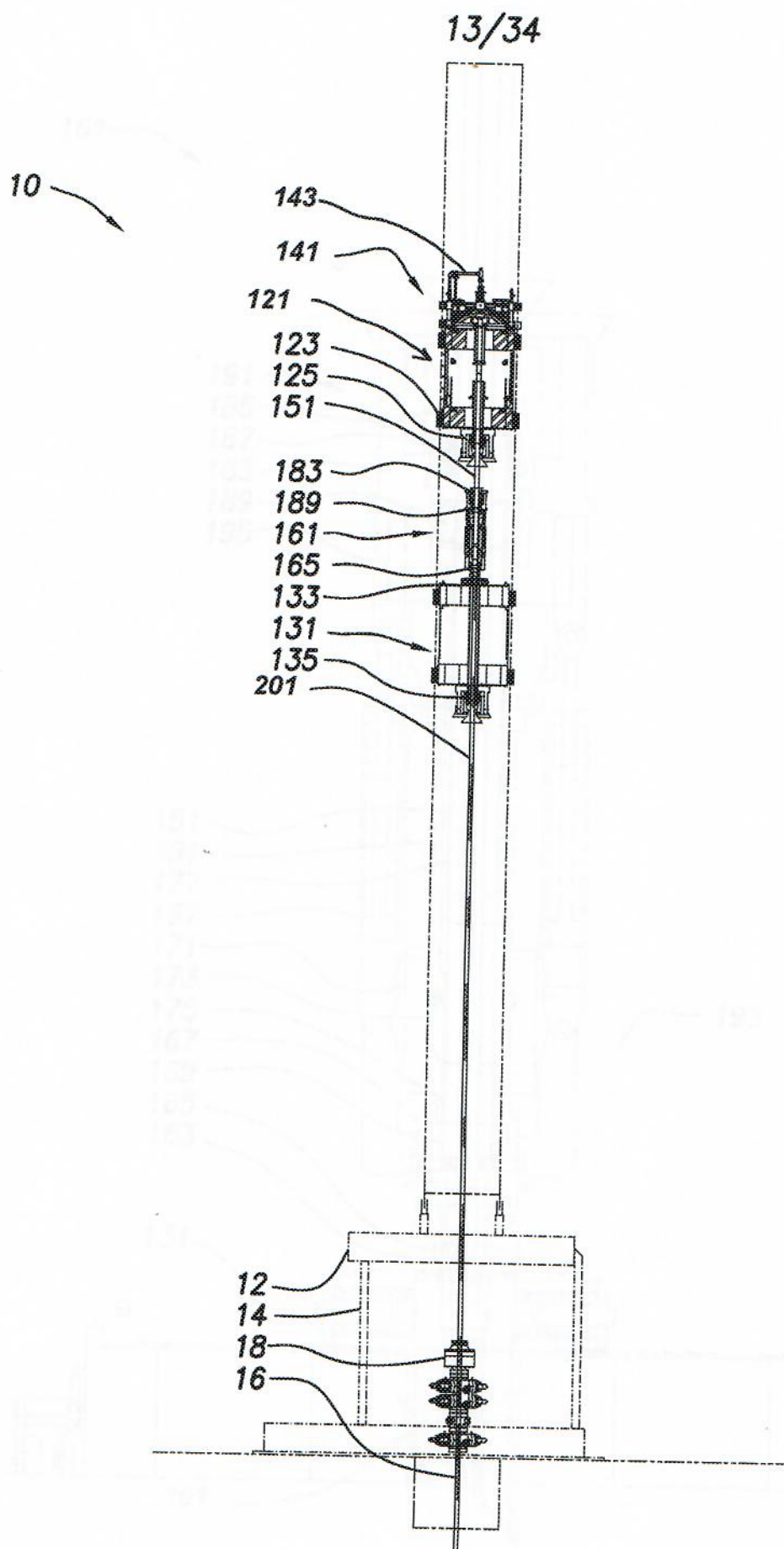


FIG. 13

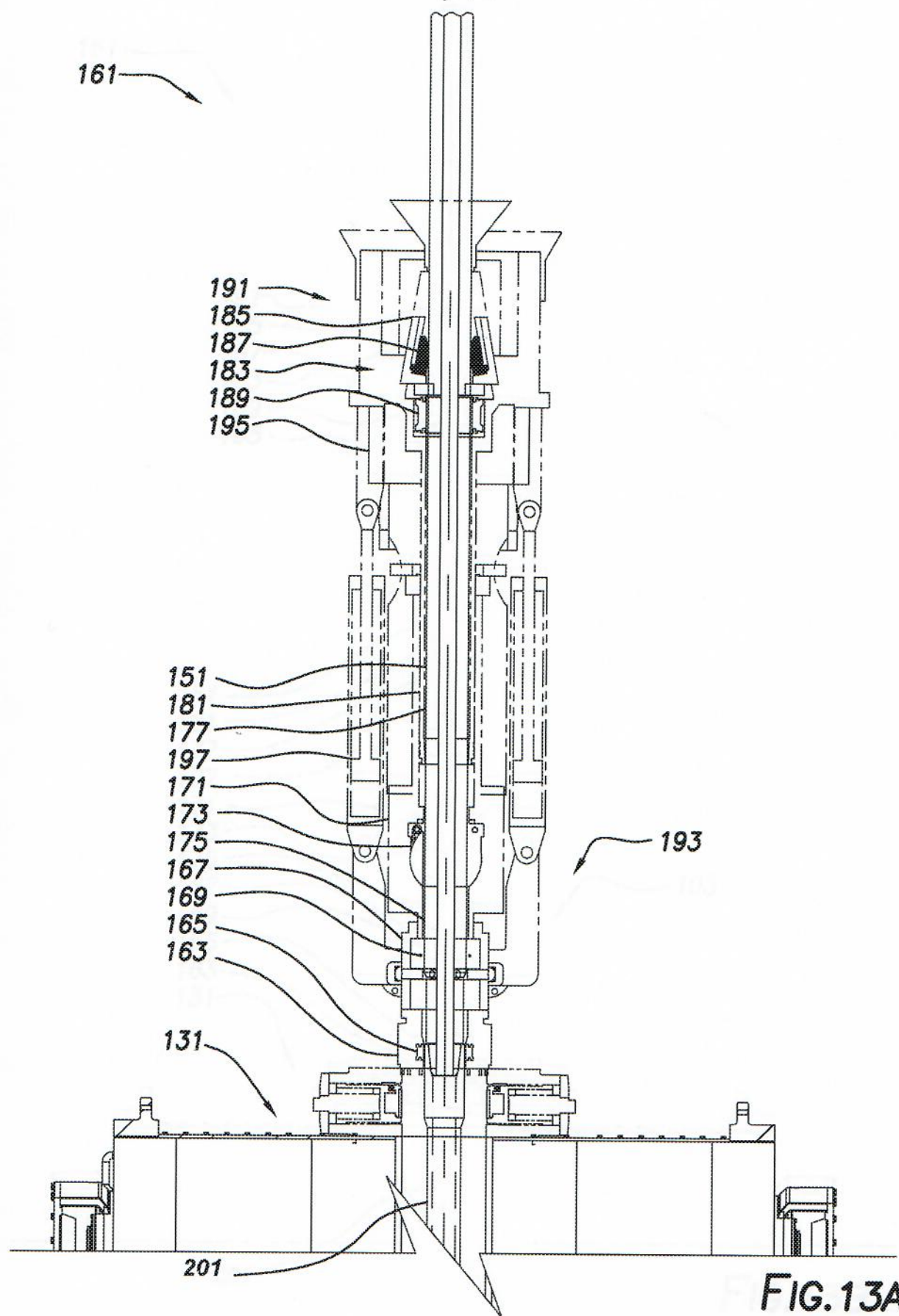
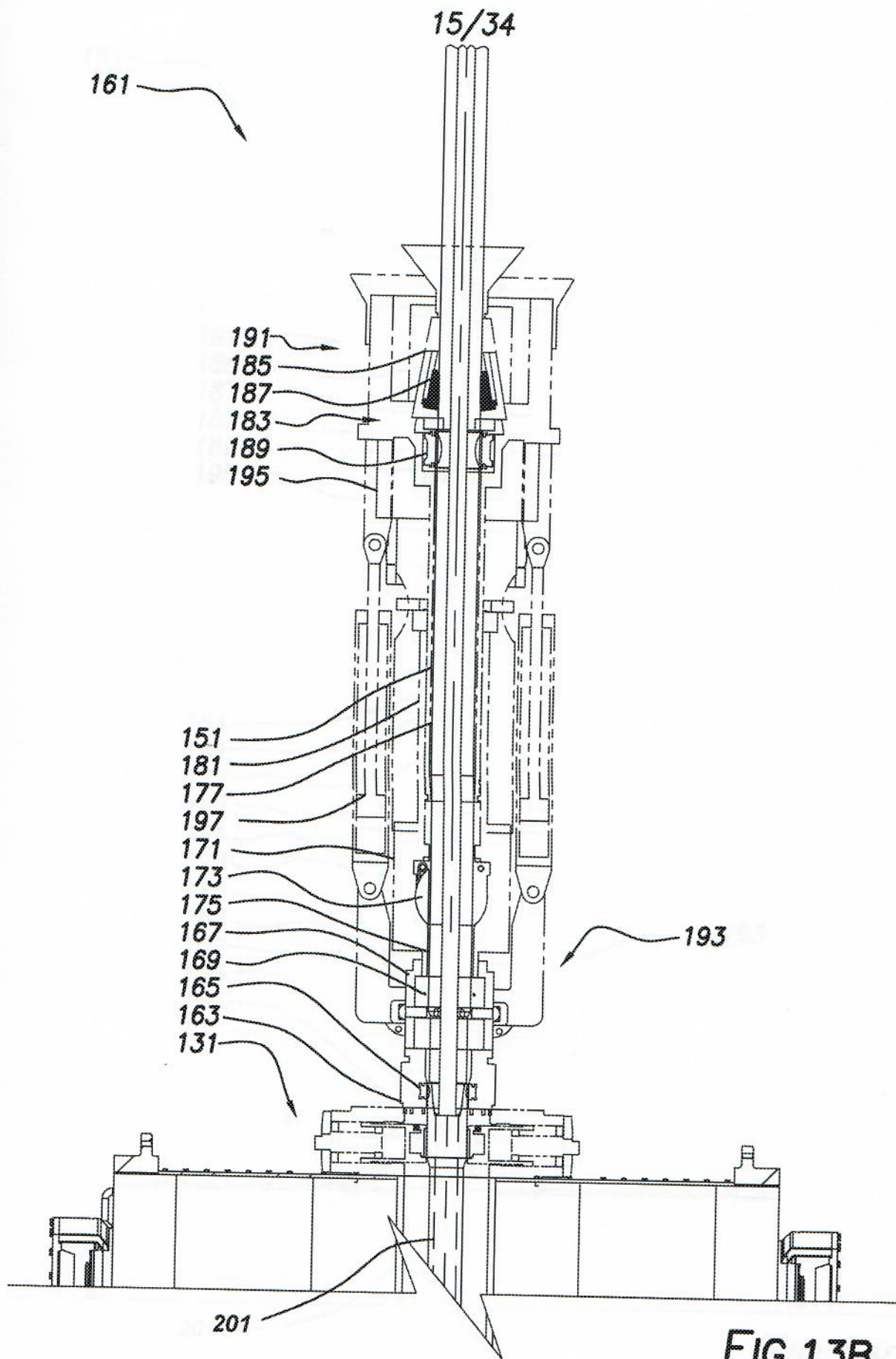


FIG. 13A



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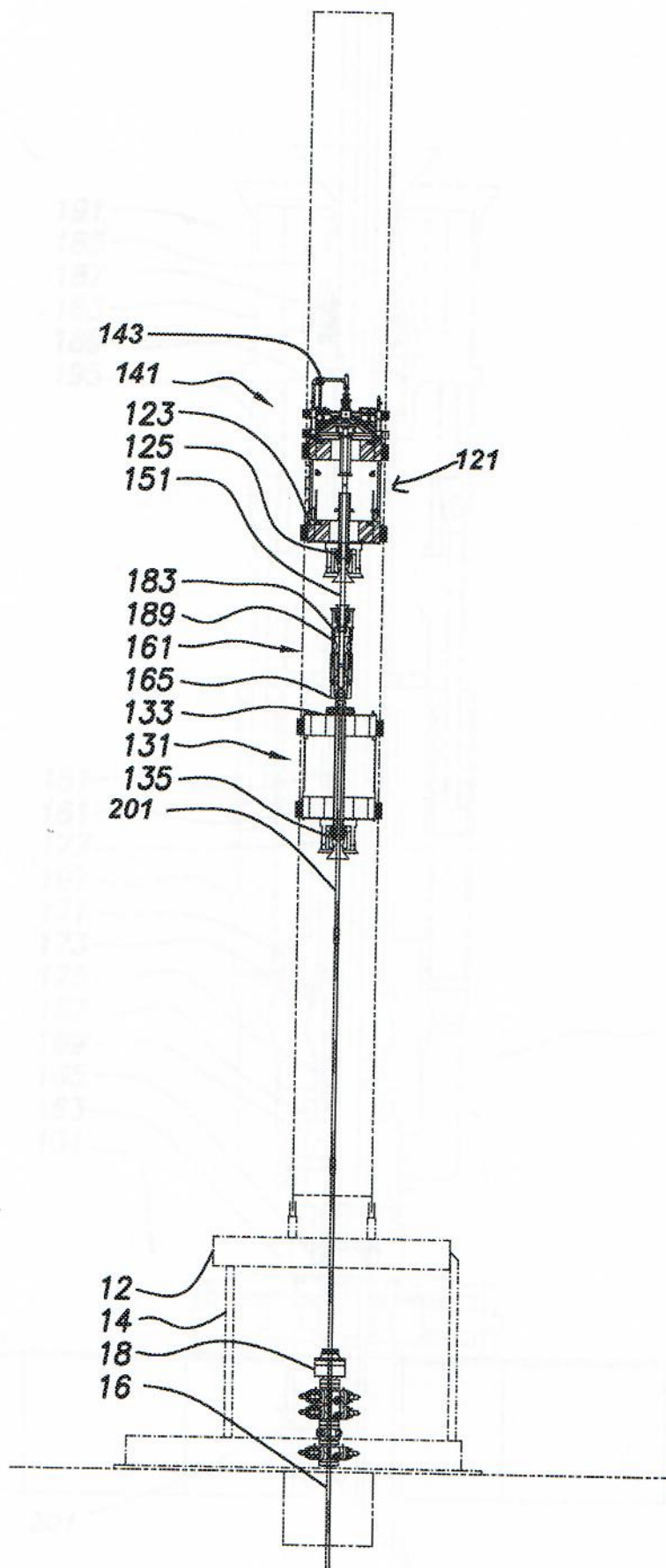
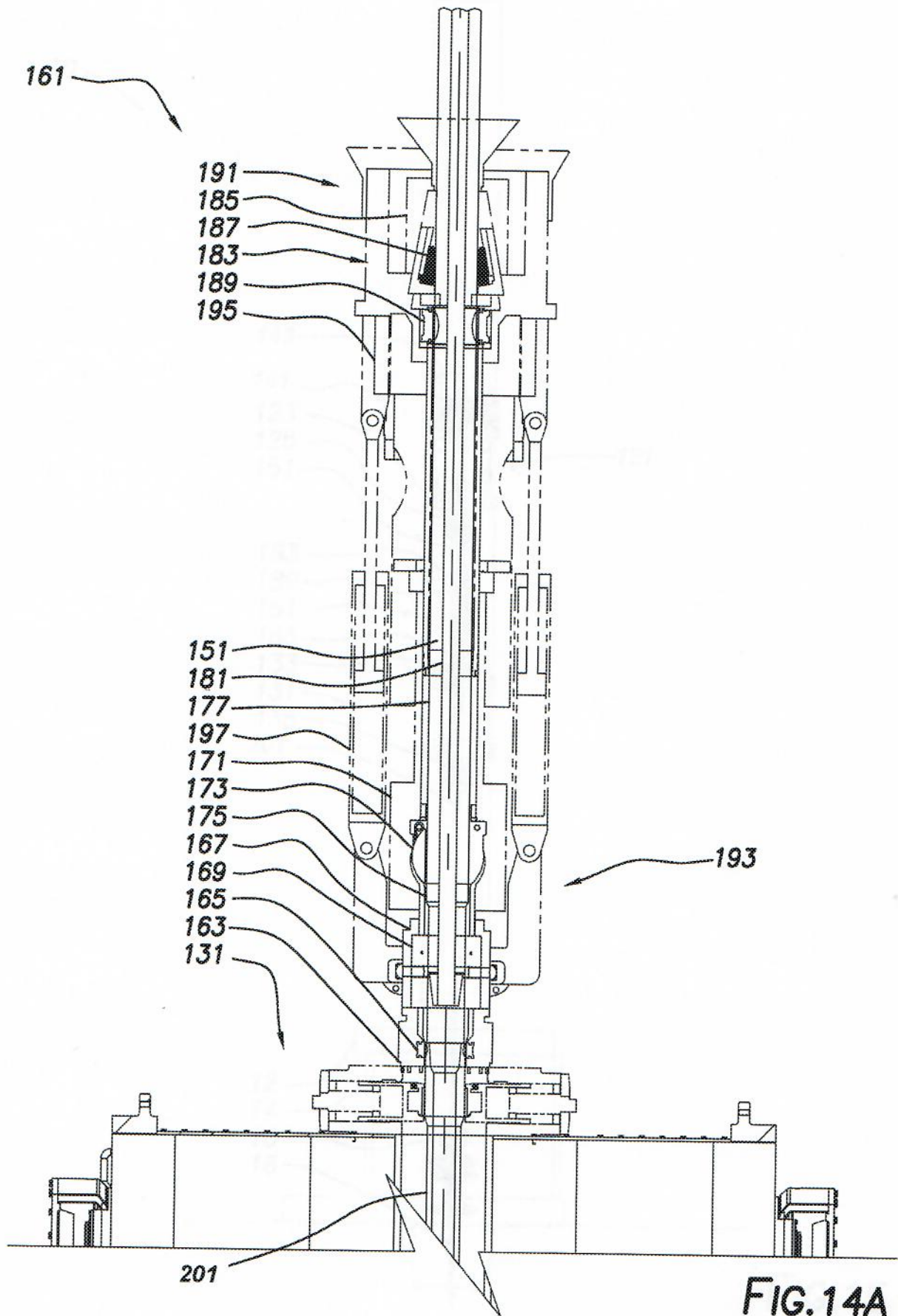


FIG. 14

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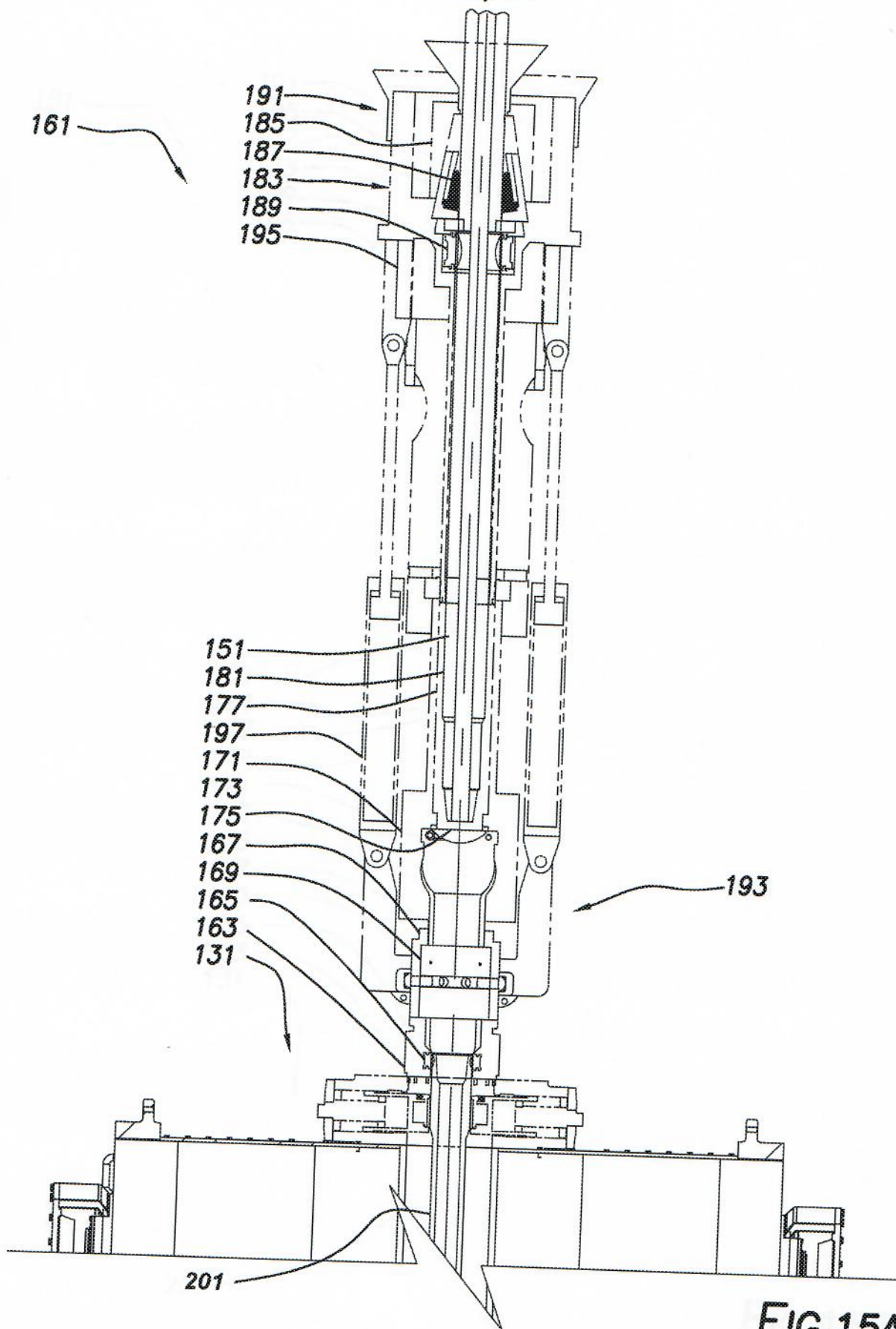
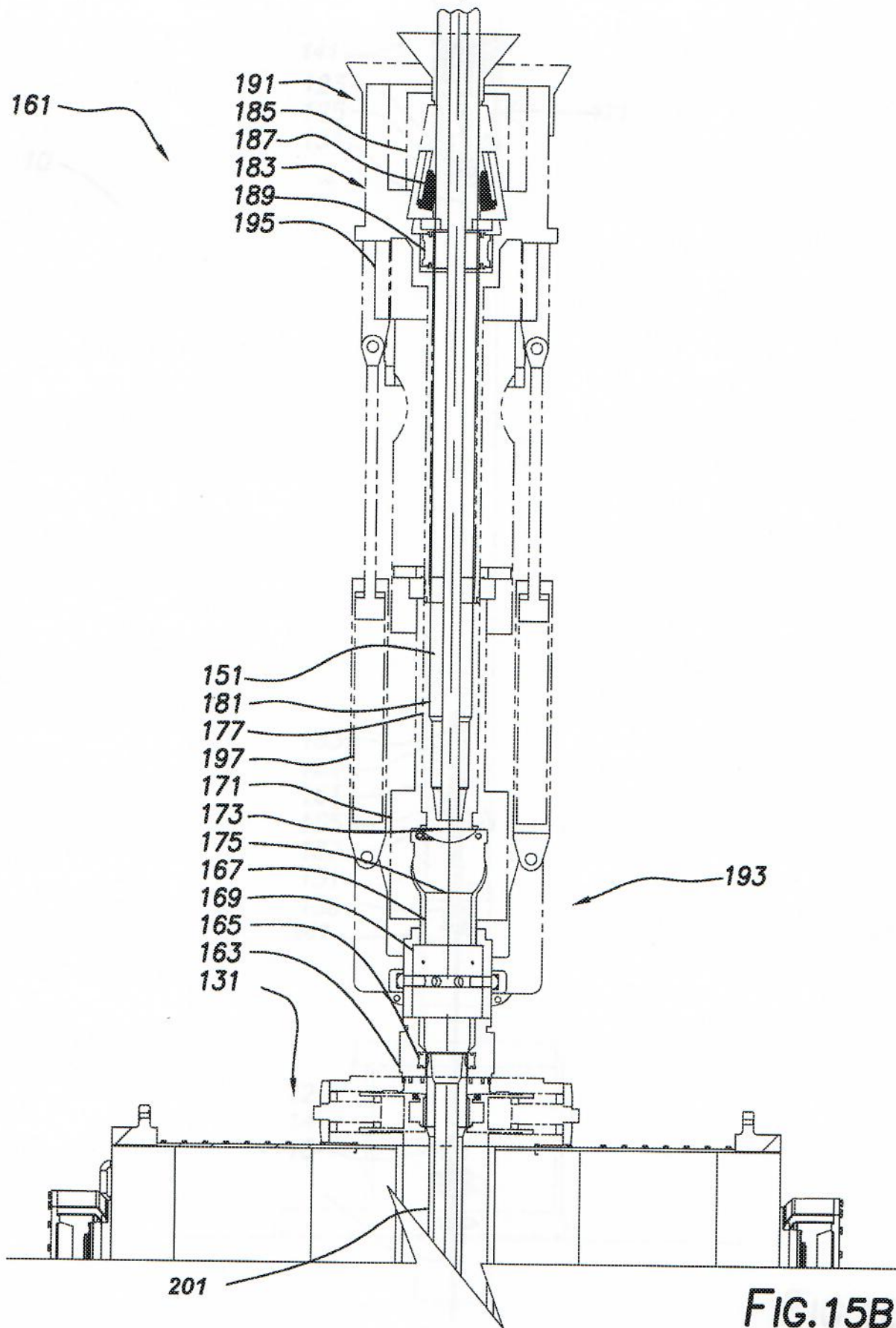


FIG. 15A

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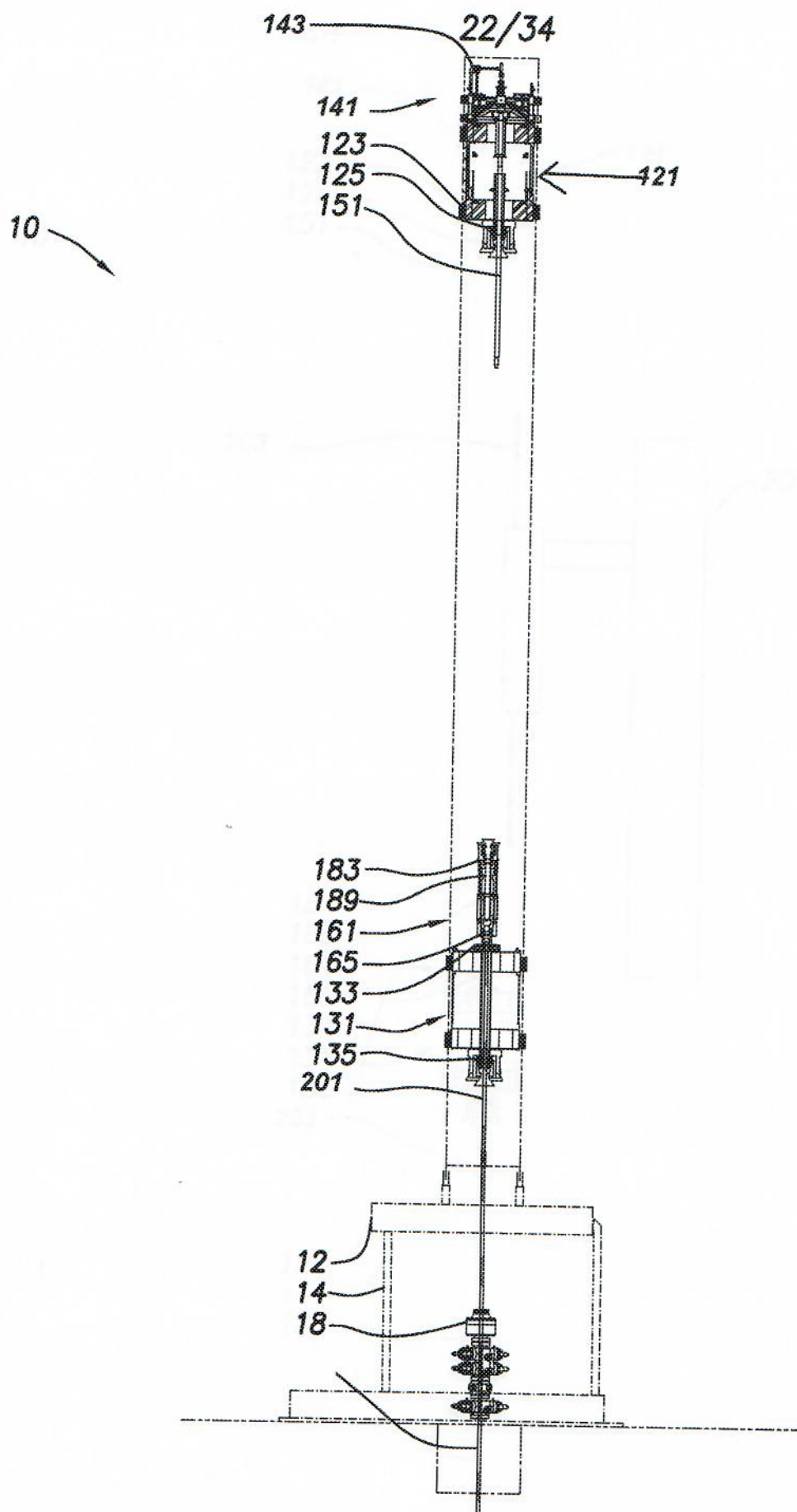


FIG. 16

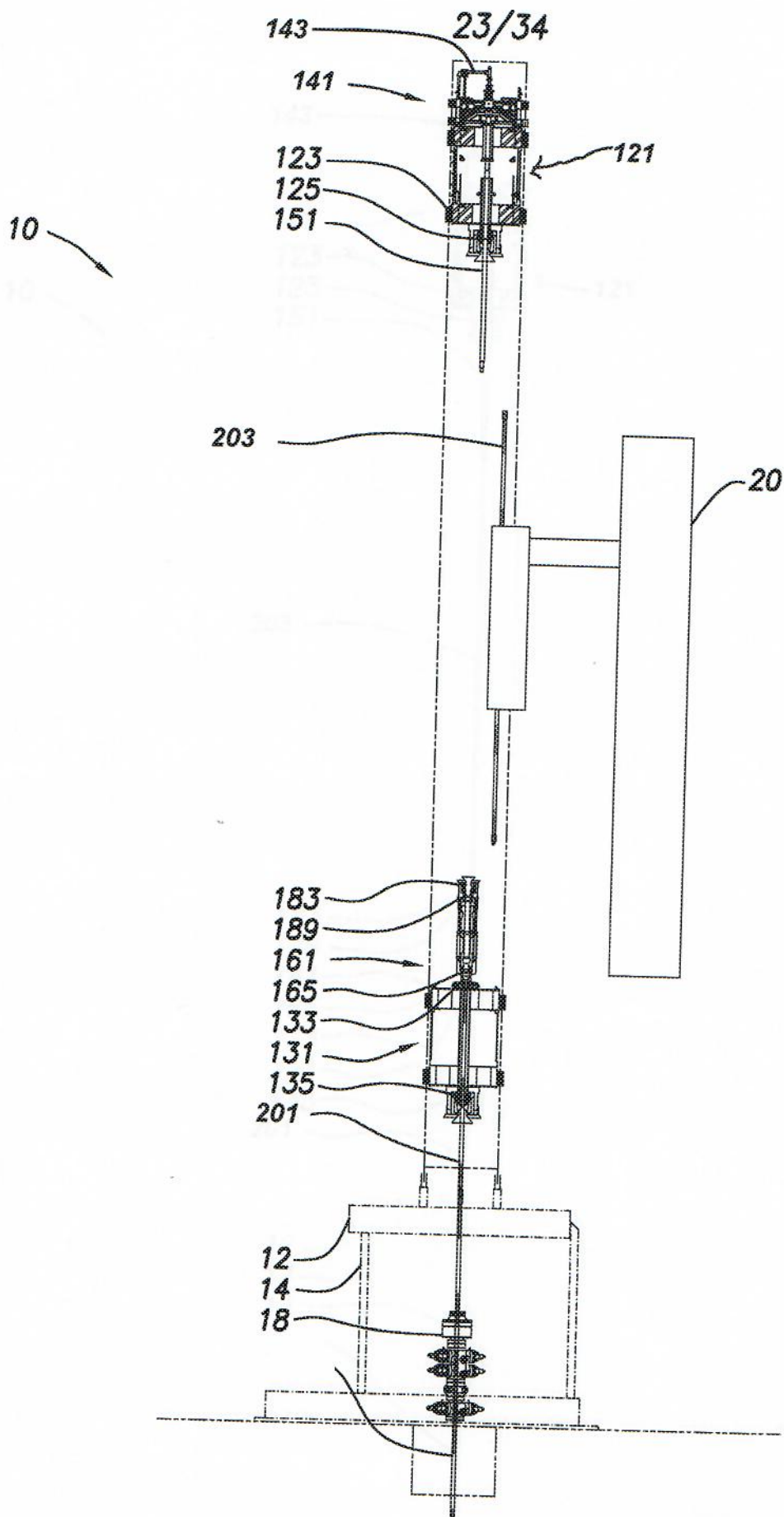


FIG.17

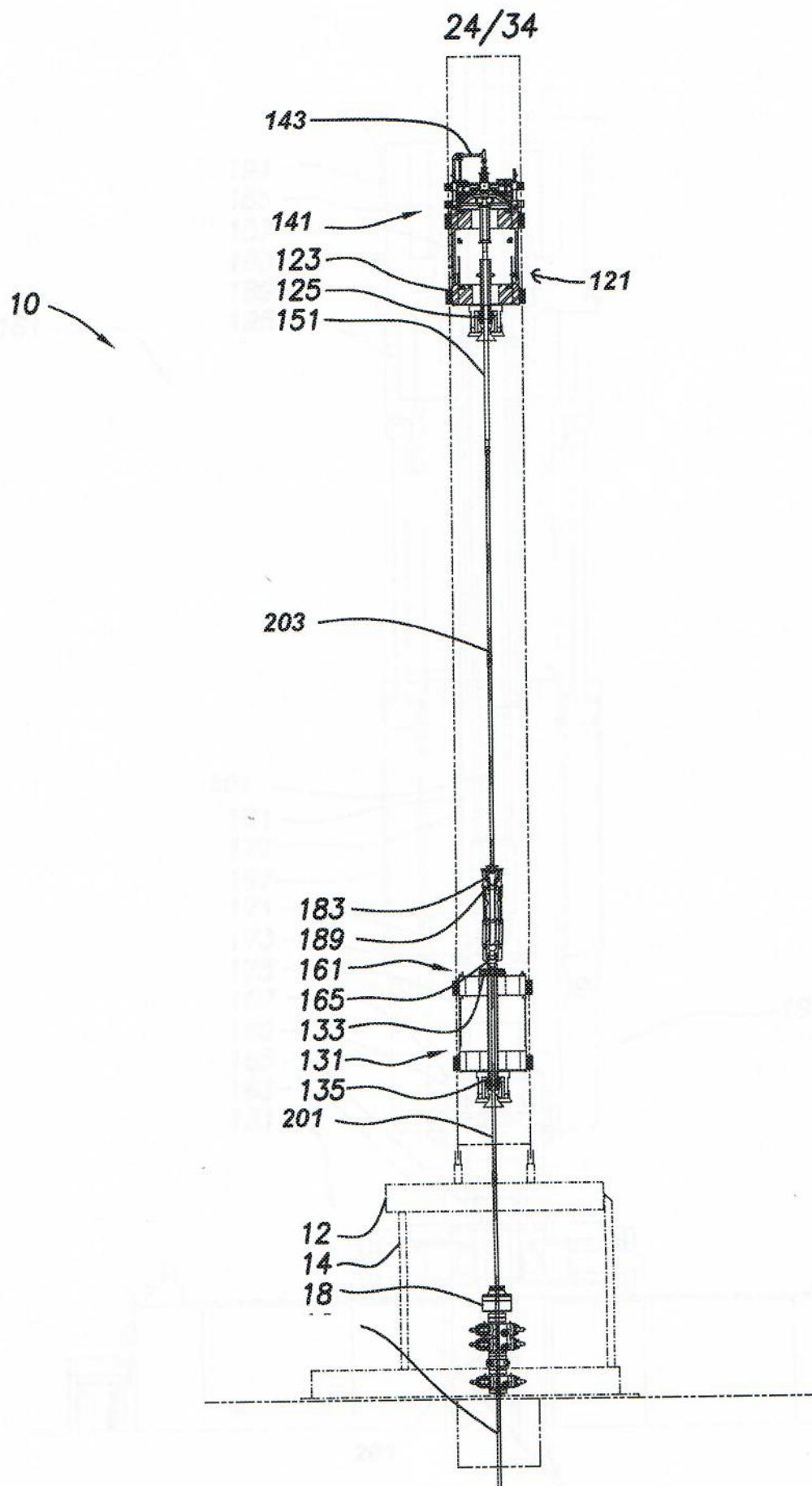
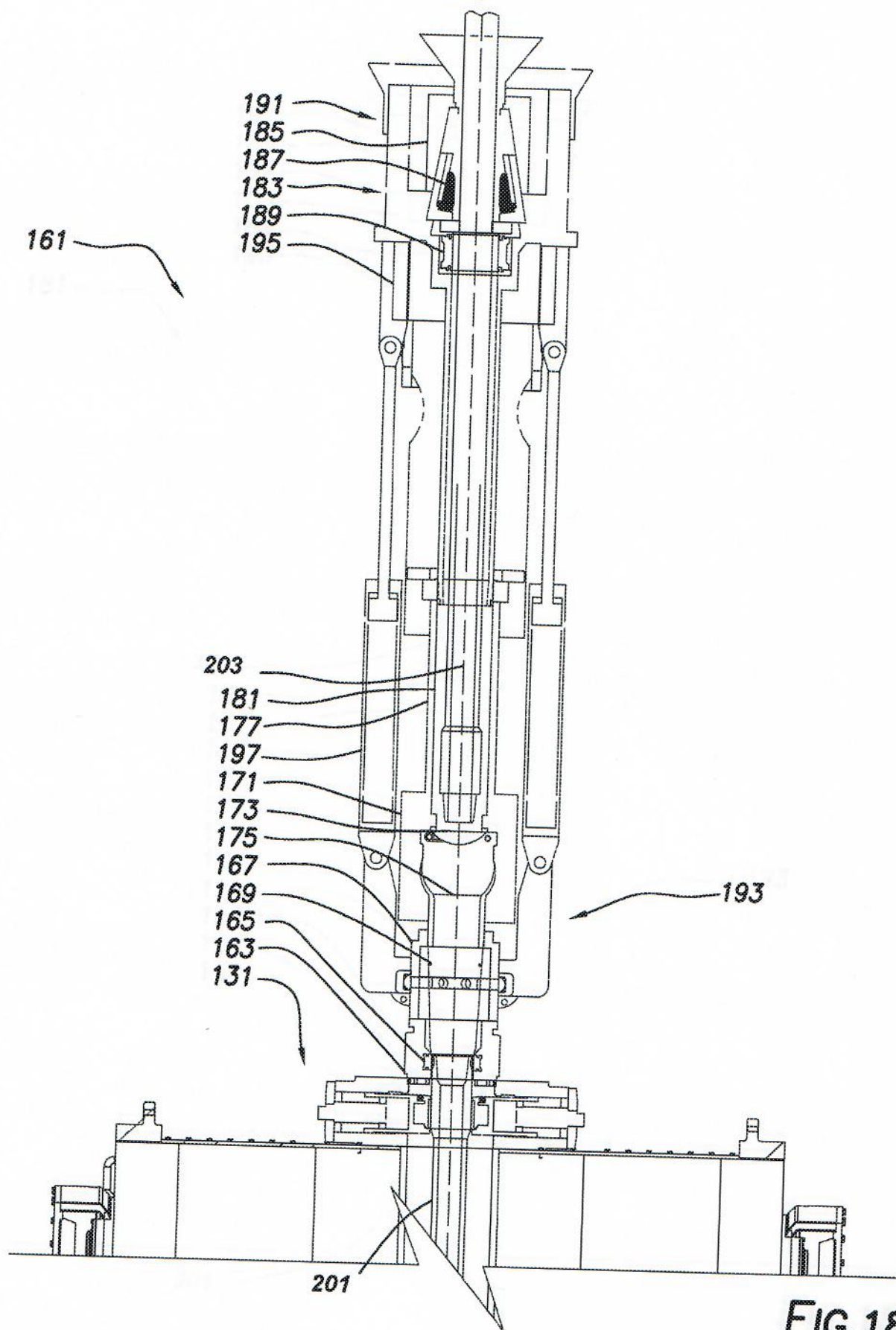
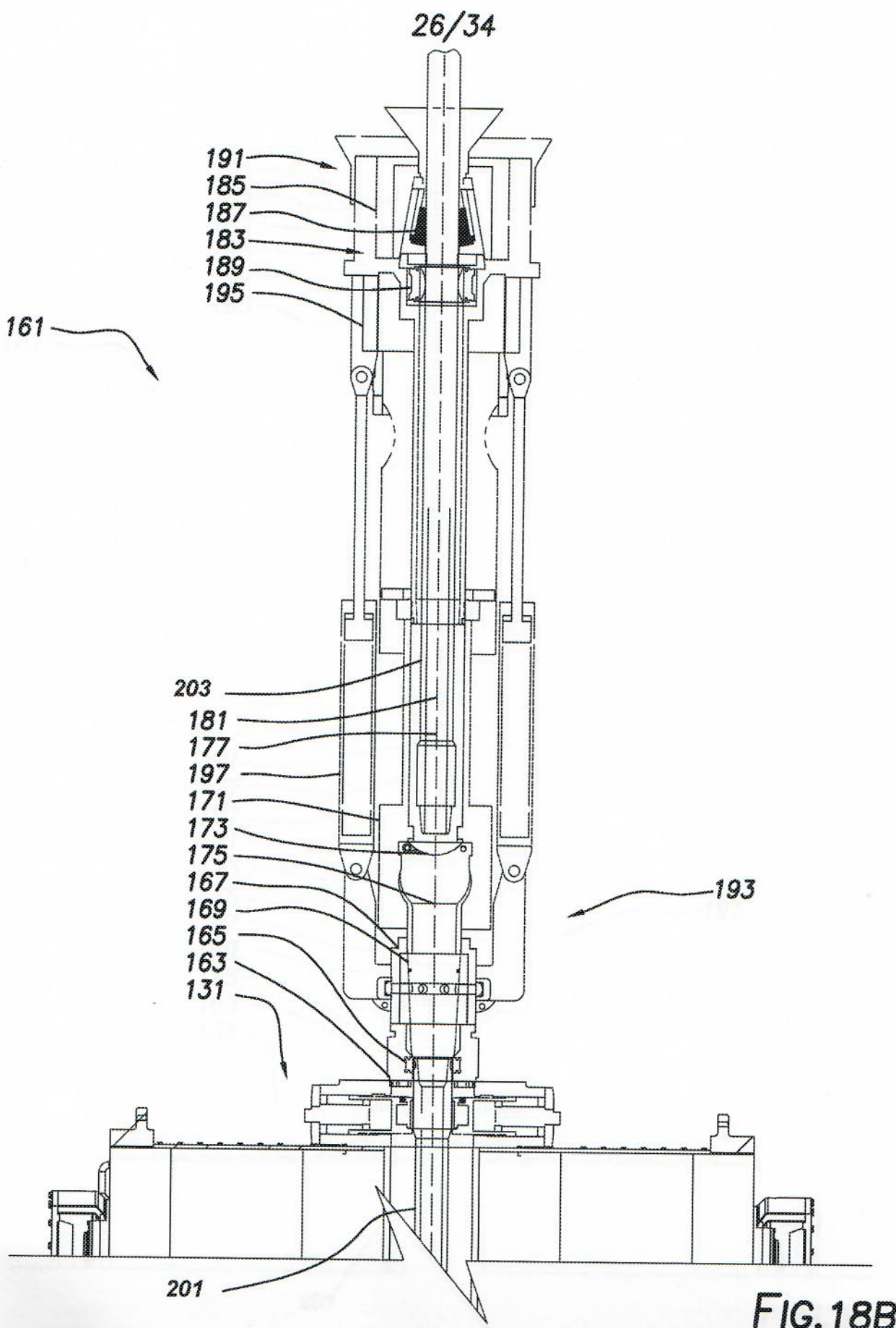
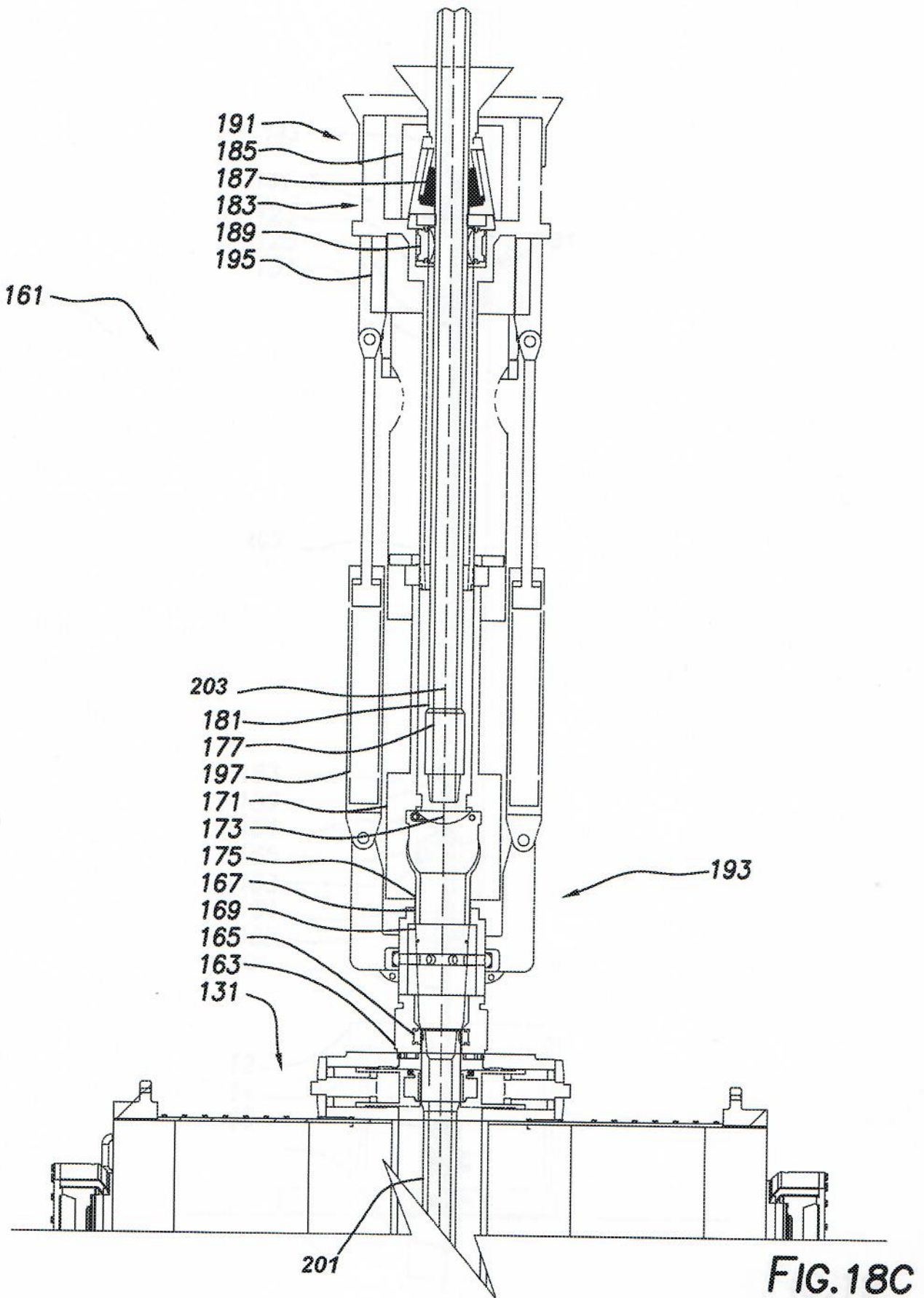


FIG. 18





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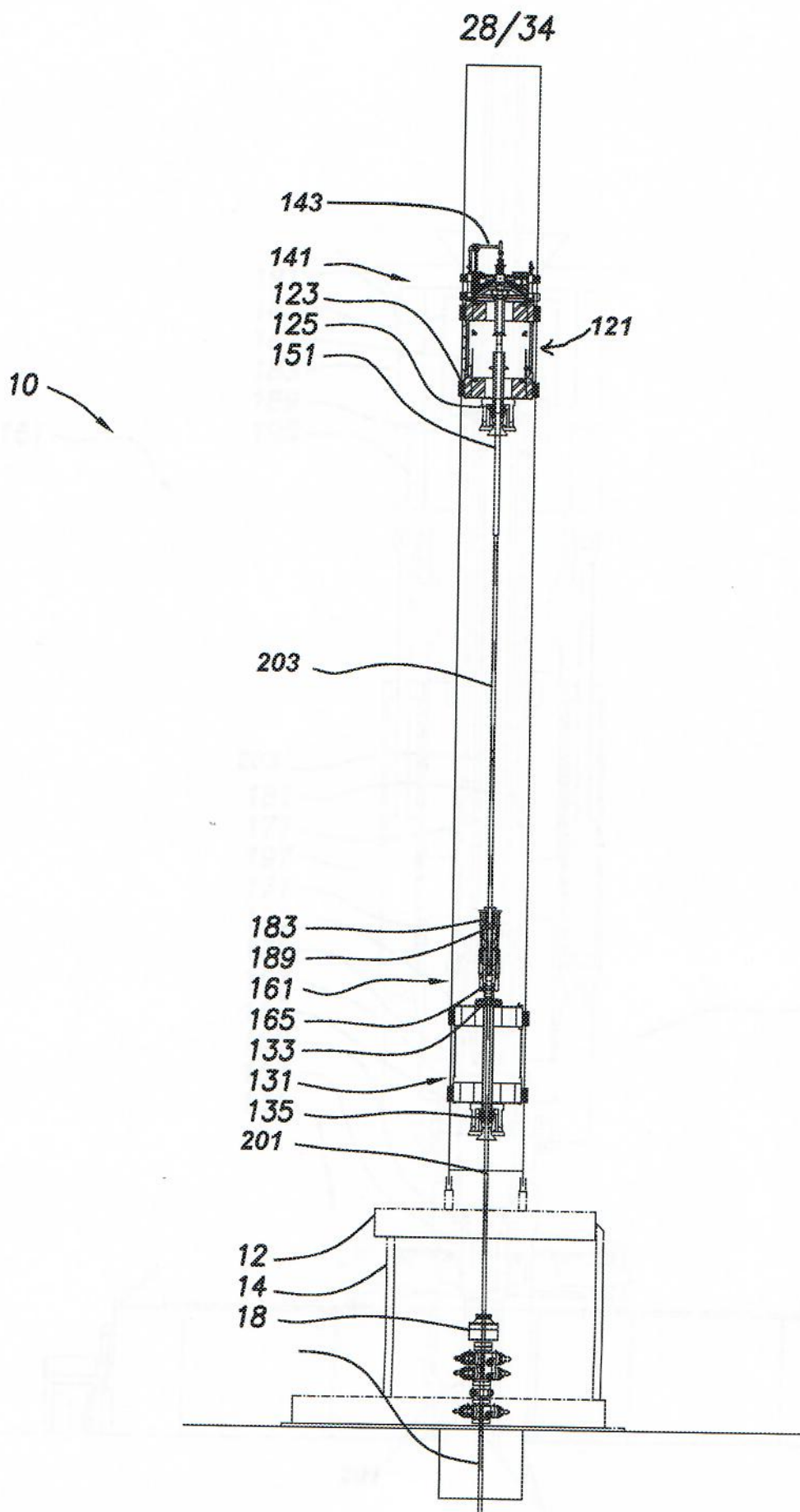


FIG.19

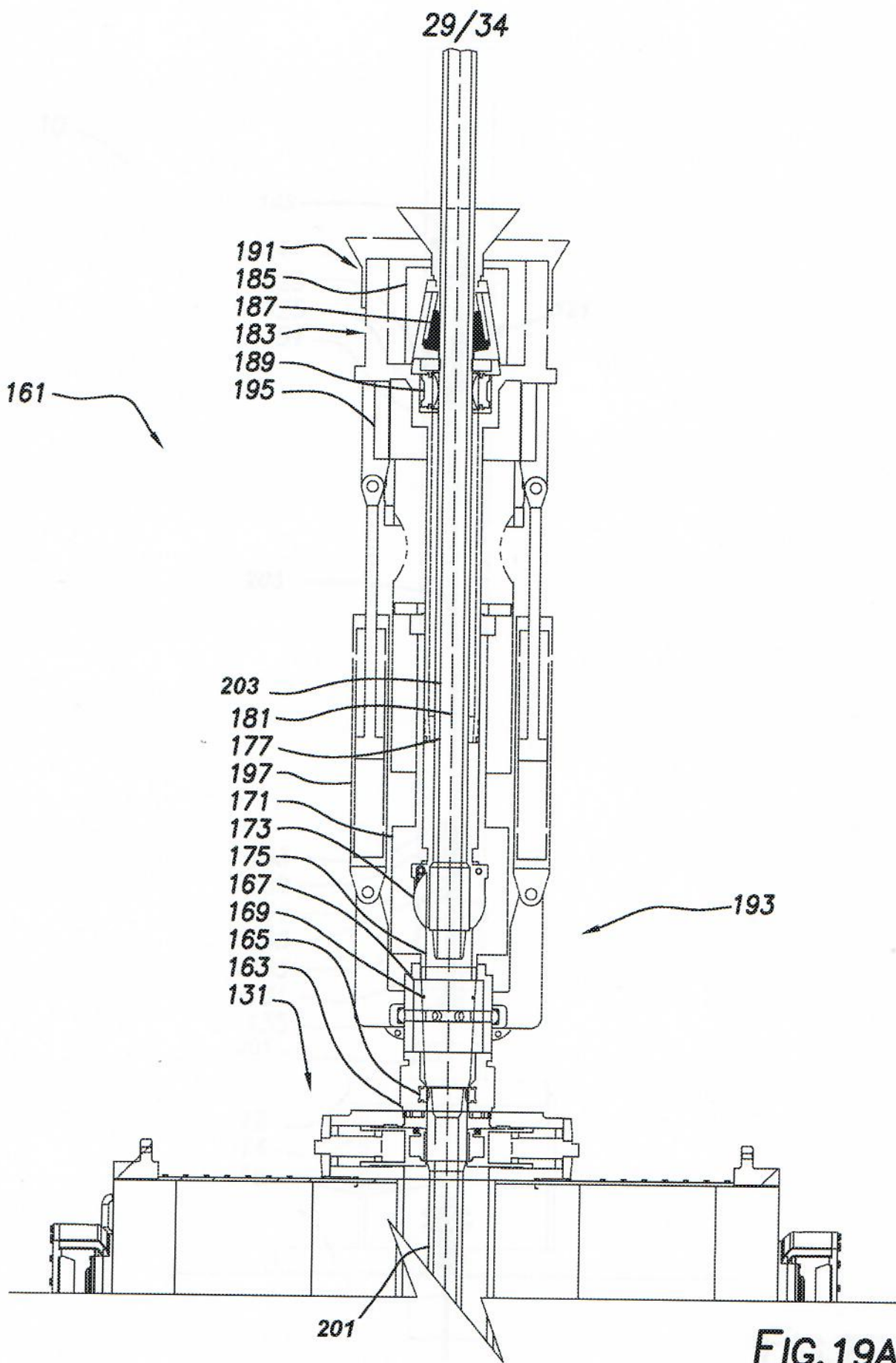


FIG. 19A

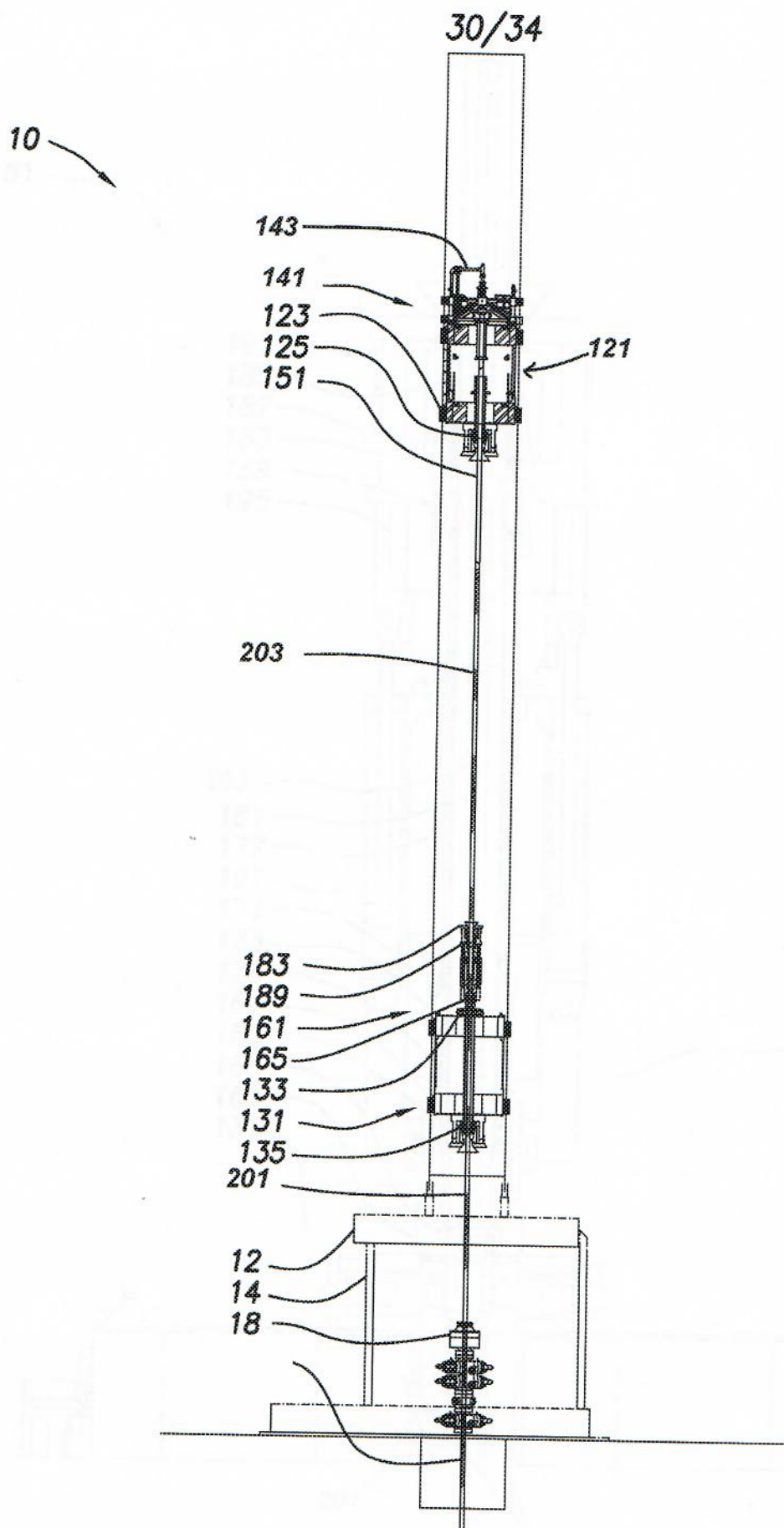
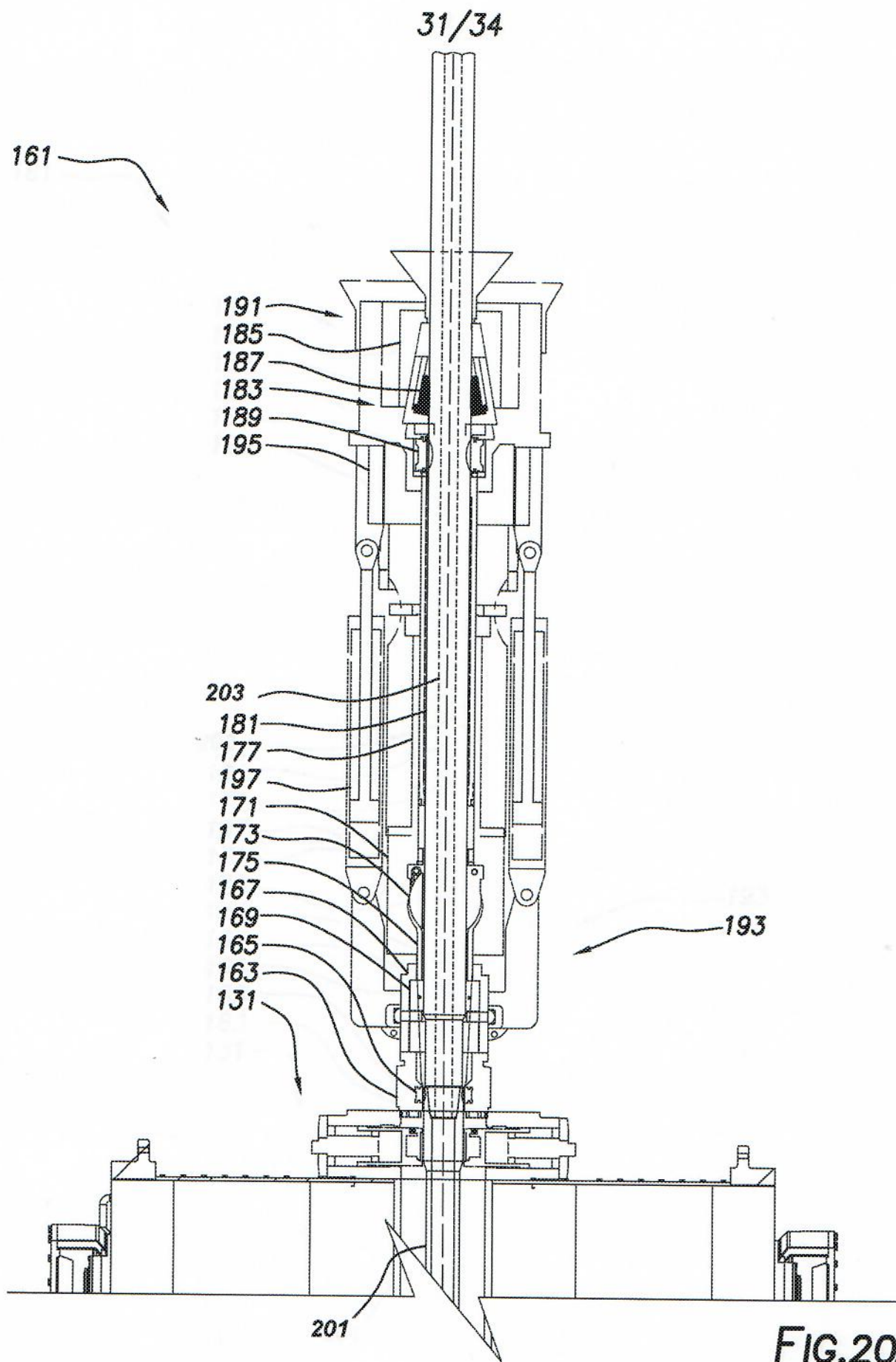


FIG. 20



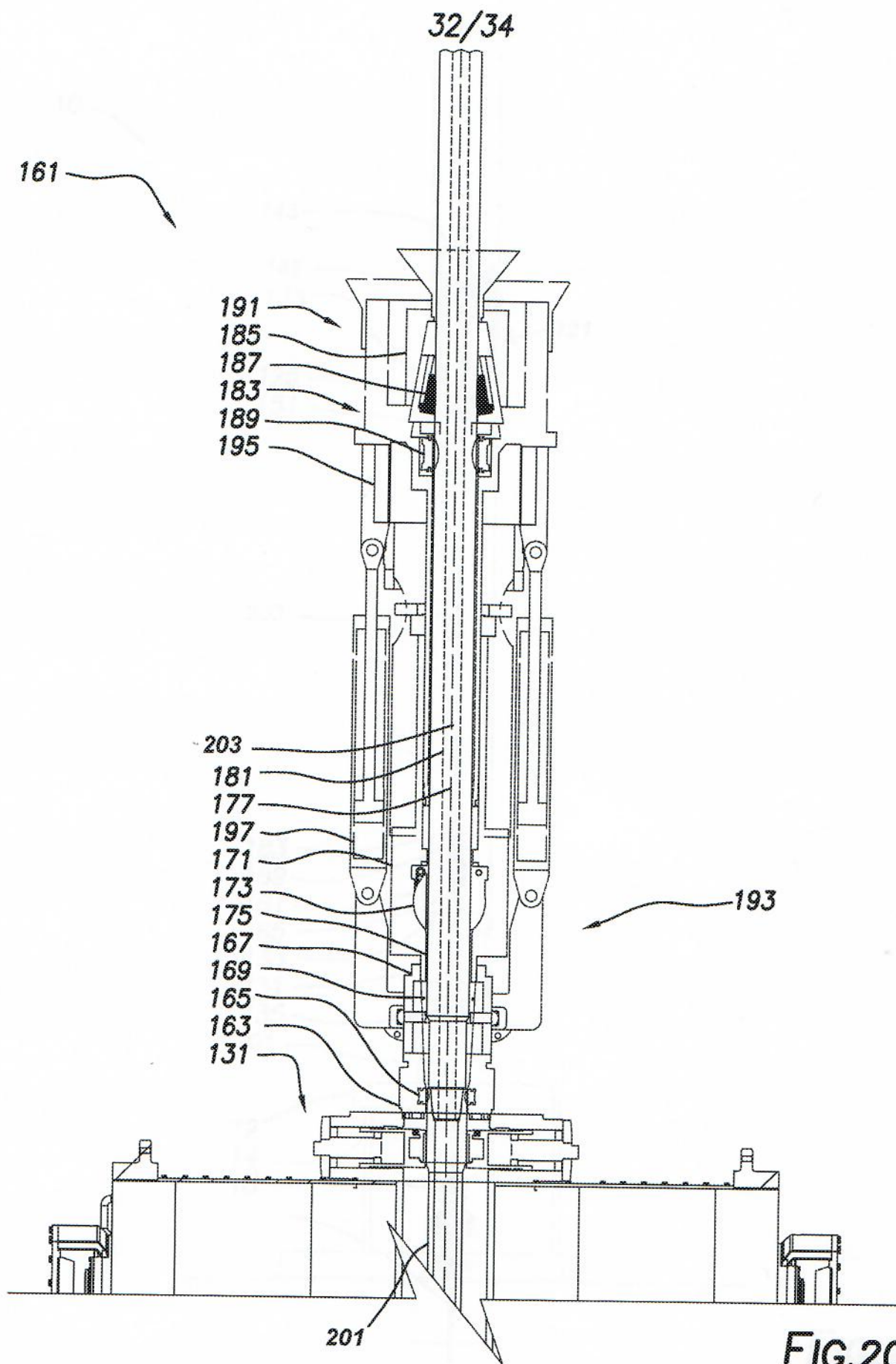


FIG. 20B

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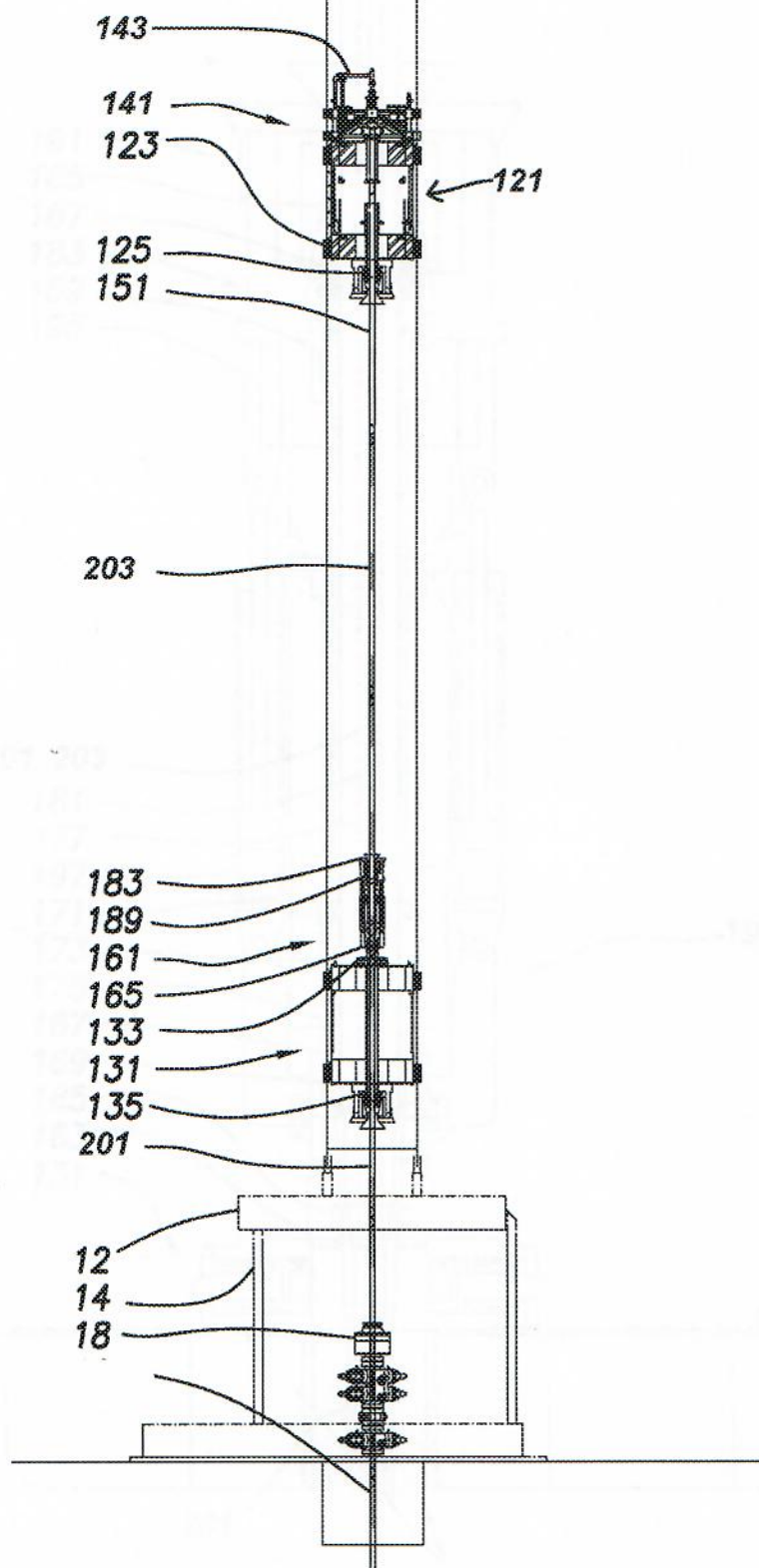


FIG. 21

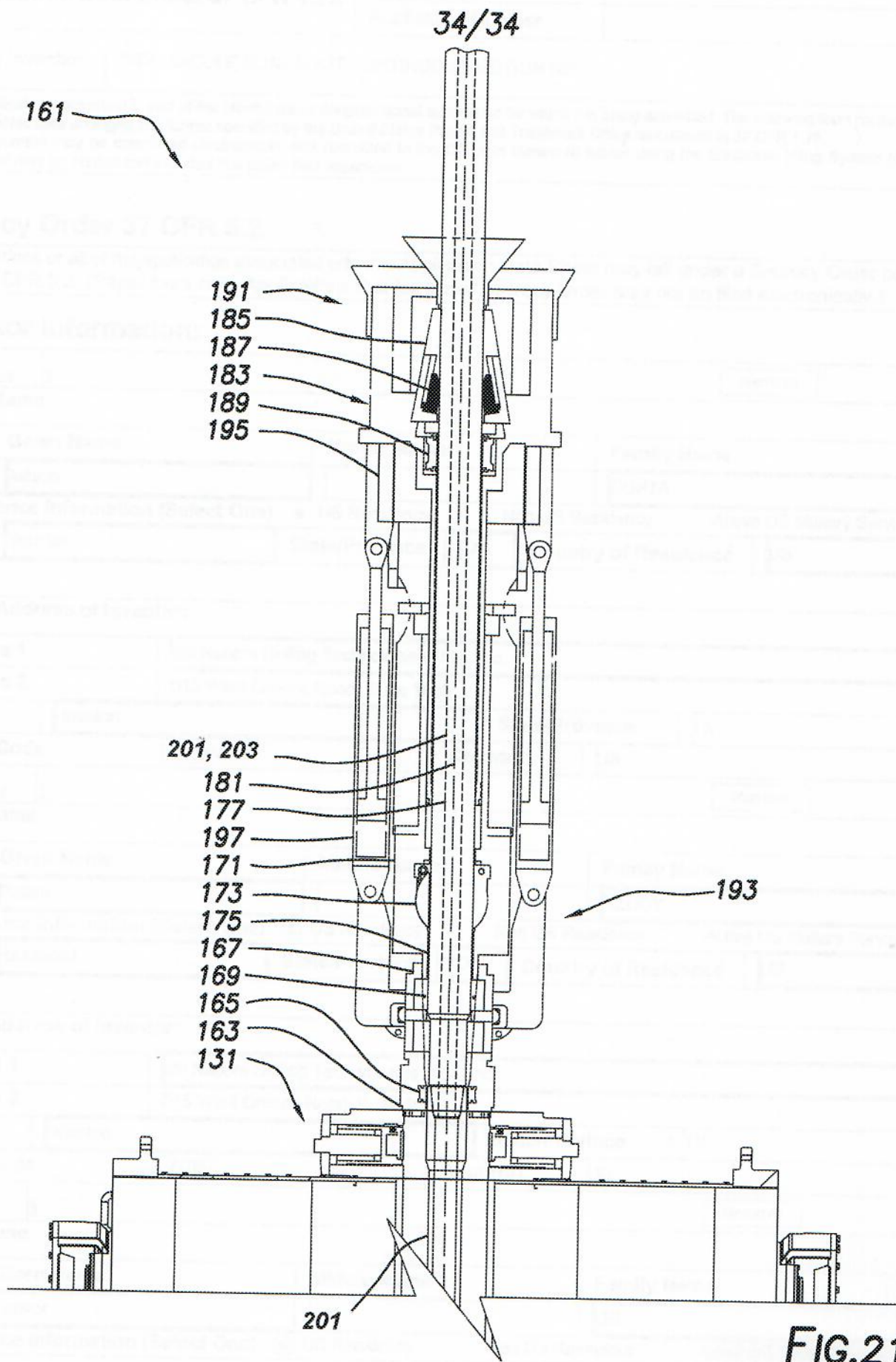


FIG. 21A

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	NABORS.015015
		Application Number	
Title of Invention	SIDE SADDLE SLINGSHOT CONTINUOUS MOTION RIG		
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	
	Ashish		GUPTA		
Residence Information (Select One) • US Residency Non US Residency Active US Military Service					
City	Houston	State/Province	TX	Country of Residence	US

Mailing Address of Inventor:

Address 1	c/o Nabors Drilling Technologies USA, Inc.				
Address 2	515 West Greens Road, Suite 1000				
City	Houston	State/Province	TX		
Postal Code	77067	Country i	US		

Inventor	2				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Padira		REDDY		
Residence Information (Select One) • US Residency Non US Residency Active US Military Service					
City	Richmond	State/Province	TX	Country of Residence	US

Mailing Address of Inventor:

Address 1	c/o Nabors Drilling Technologies USA, Inc.				
Address 2	515 West Greens Road, Suite 1000				
City	Houston	State/Province	TX		
Postal Code	77067	Country i	US		

Inventor	3				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Denver		EE		
Residence Information (Select One) • US Residency Non US Residency Active US Military Service					

Application Data Sheet 37 CFR 1.76		Attorney Docket Number		NABORS.015015	
		Application Number			
Title of Invention	SIDE SADDLE SLINGSHOT CONTINUOUS MOTION RIG				
City	Houston	State/Province	TX	Country of Residence	US
Mailing Address of Inventor:					
Address 1	c/o Nabors Drilling Technologies USA, Inc.				
Address 2	515 West Greens Road, Suite 1000				
City	Houston	State/Province	TX		
Postal Code	77067	Country	US		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.					

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	100183		
Email Address	docket@al-ip.com	Add Email	Remove Email

Application Information:

Title of the Invention	SIDE SADDLE SLINGSHOT CONTINUOUS MOTION RIG		
Attorney Docket Number	NABORS.015015	Small Entity Status Claimed	☐
Application Type	Provisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	34	Suggested Figure for Publication (if any)	

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:			
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	NABORS.015015
		Application Number	
Title of Invention	SIDE SADDLE SLINGSHOT CONTINUOUS MOTION RIG		
Customer Number	100183		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this 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.

Prior Application Status		Remove
Application Number	Continuity Type	Prior Application Number
		Filing Date (YYYY-MM-DD)

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

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(d). 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(h)(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.

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.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	NABORS.015015
		Application Number	
Title of Invention	SIDE SADDLE SLINGSHOT CONTINUOUS MOTION RIG		

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices
If 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 World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application. In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application. In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

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.	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	NABORS.015015
		Application Number	
Title of Invention	SIDE SADDLE SLINGSHOT CONTINUOUS MOTION RIG		

Mailing Address Information For Applicant:

Address 1	515 West Greens Road, Suite 1000		
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

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.

Assignee 1

Complete this section only if non-applicant assignee information is desired to be included on the patent application publication in accordance with 37 CFR 1.215(b). Do not include in this section 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), as the patent application publication will include the name of the applicant(s).

Remove

If the Assignee is an Organization check here. ☐

Prefix	Given Name	Middle Name	Family Name	Suffix

Mailing Address Information For Non-Applicant Assignee:

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

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

Add

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	NABORS.015015
		Application Number	
Title of Invention	SIDE SADDLE SLINGSHOT CONTINUOUS MOTION RIG		

Signature:

[Remove](#)

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Signature	/Michael Locklar/		Date (YYYY-MM-DD)	2018-07-19	
First Name	Michael	Last Name	Locklar	Registration Number	44878

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

[Add](#)

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.

Señor

JEFE DE LA DIVISIÓN DE NUEVAS CREACIONES

DIVISIÓN DE NUEVAS CREACIONES

E. _____ S. _____ D. _____

Re: **PI. - NABORS DRILLING TECHNOLOGIES USA, INC.- Solicitud de Patente de Invención para "EQUIPO DE PERFORACIÓN DE MOVIMIENTO CONTINUO CON HONDA DE MONTAJE LATERAL."**-Expediente número **NC2019/0007779.-**

Por medio del presente procedo a dar respuesta al Auto No. 6946 del 25 de julio de 2019, dictado por este Despacho y notificado por fijación en línea del 26 de julio de 2019. Con el fin de dar respuesta al Auto emitido por la División de Nuevas Creaciones, a continuación, expongo lo siguiente:

Cesión

1. En respuesta al requerimiento emitido por la Superintendencia, me permito allegar copia del documento de cesión, el cual acredita el traspaso de los derechos sobre la patente de la referencia, por parte de sus inventores a favor de mi representado.

Análisis de la Prioridad

2. Con relación al requerimiento por el cual se ordena presentar copia de la solicitud cuya prioridad se invoca, presentamos ante este Despacho copia debidamente certificada de la solicitud US 62/700,704 del 19 de julio de 2018, respecto de cual reclama prioridad la solicitud de patente de la referencia.

Anexos

3. Anexo al presente memorial, presento los siguientes documentos:

- Copia del documento de cesión, de parte los inventores al solicitante.

- Copia certificada de la solicitud cuya prioridad se invoca, junto a su debida traducción.

Ruego a usted tomar atenta nota de lo anterior y proceder de conformidad.

Señor Superintendente,



ALICIA LLORED A RICAURTE

T.P. 53.215

Direcciones para Notificación: **notificacionesip@lloredacamacho.com**
notificacionespatentes@lloredacamacho.com