

ESTTA Tracking number: **ESTTA1282455**

Filing date: **05/02/2023**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

Petition for Cancellation

Notice is hereby given that the following party has filed a petition to cancel the registration indicated below.

Petitioner information

Name	Schlumberger Limited (Schlumberger N.V.)		
Entity	naamloze vennootschap (nv)	Citizenship	Curacao
Address	5599 SAN FELIPE STREET HOUSTON, TX 77056 UNITED STATES		
Attorney information	PUJA DETJEN PATTERSON SHERIDAN, LLP SUITE1600 24 GREENWAY PLAZA HOUSTON, TX 77046 UNITED STATES Primary email: psdocketing@pattersonsheridan.com Secondary email(s): pdetjen@pattersonsheridan.com, dhuang@pattersonsheridan.com, tms@pattersonsheridan.com, gpark- er@pattersonsheridan.com 713-623-4844		
Docket no.	SLBR/T024		

Registration subject to cancellation

Registration no.	5643436	Registration date	01/01/2019
Register	Principal		
Registrant	Triple J LLC 1950 ELKHORN CT., UNIT 120 SAN MATEO,, CA 94403 UNITED STATES		

Goods/services subject to cancellation

Class 007. First Use: Oct 1, 1995 First Use In Commerce: Oct 1, 1995 All goods and services in the class are subject to cancellation, namely: Anti-friction bearings for machines; Bearing brackets for machines; Bearings for transmission shafts, being parts of machines; Bearings, as parts of machines; Engine bearings; Lubrication machines; Machine parts, namely, roll mill bearings; Piston rings; Roller bearings for machines; Shaft bearings for vacuum pumps

Grounds for cancellation

Abandonment	Trademark Act Section 14(3)
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Attachments	Petition for Cancellation - SLB - 5-2-2023.pdf(2585614 bytes)
Signature	/Puja Detjen/
Name	Puja Detjen
Date	05/02/2023

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD**

In Re Trademark Registration No. 5,643,436

Schlumberger Limited (Schlumberger N.V.)

Petitioner,

v.

Triple J LLC

Registrant.

Cancellation No.:

Mark: **SLB**
Reg. No. 5,643,436

Petition for Cancellation

Schlumberger Limited (Schlumberger N.V.), a foreign entity organized in Curacao (hereafter, “Petitioner”), believes it is being and will continue to be damaged by the registration of the SLB mark shown in Registration No. 5,643,436 (the ’436 Registration) and therefore petitions for cancellation of the same.

The grounds for cancellation are as follows:

1. Petitioner offers and provides, among others, oilfield, petroleum, groundwater extraction, offshore drilling, carbon capture and storage goods and services, including but not limited to seismic data processing, formation evaluation, well testing and directional drilling, well cementing and stimulation, artificial lift, well completions, flow assurance and consulting, and software and information management systems hereafter (collectively, “Petitioner’s Goods and Services”), as well as related goods and services.

2. Petitioner owns pending United States Trademark App. No. 97/640,756 for the SLB colored design mark and United States Trademark App. No. 97/640,752 for the SLB b/w design mark (collectively, “Petitioner’s SLB Applications”). Current status copies of Petitioner’s SLB Applications are attached and pleaded into the record as Exhibit A.

3. In Office Actions dated November 8, 2022 for each of Petitioner's SLB Applications, the USPTO has partially refused registration in Class 7 under Trademark Act 2(d), 15 U.S.C. §1052(d), on the basis of a likelihood of confusion with the SLB mark in the '436 Registration, thereby interfering with Petitioner's SLB Applications and causing harm to Petitioner. Because this harm to Petitioner is within the zone of interests protected by the Lanham Act and is proximately caused by the '436 Registration, Petitioner is entitled to bring this action. Attached hereto as Exhibit B are true and correct copies of the office actions issued in Petitioner's SLB Applications.

4. Triple J LLC, a limited liability company organized in California (hereafter, "Registrant") having an address of 1950 Elkhorn Ct., Unit 120, San Mateo, CA 94403 is the current listed owner of the '436 Registration.

5. Registrant is therefore the record owner of the '436 Registration in connection with, *inter alia*:

Class 007: Anti-friction bearings for machines; Bearing brackets for machines; Bearings for transmission shafts, being parts of machines; Bearings, as parts of machines; Engine bearings; Lubrication machines; Machine parts, namely, roll mill bearings; Piston rings; Roller bearings for machines; Shaft bearings for vacuum pumps

(hereafter, "Registrant's Goods").

6. Pursuant to investigations conducted by Petitioner, national business database searches reveal no results for the entity "Triple J LLC" in connection with the address provided to the USPTO for the '436 Registration. Searches of national business report databases reveal no results of a clear connection between the entity "Triple J LLC" and the mark SLB or the address provided to the USPTO for the '436 Registration. According to the records of the California Secretary of State, there are no results for the entity "Triple J LLC" with a clear connection to the mark SLB

or the address provided to the USPTO for the '436 Registration. A search of national business filing and fictitious business name databases revealed no results for the entity "Triple J LLC" with a clear connection to the mark SLB or the address provided to the USPTO for the '436 Registration. A search of import record databases revealed no results for the entity "Triple J LLC" with a clear connection to the mark SLB.

7. Pursuant to investigations conducted by Petitioner including, among others, searches of the internet at large, websites, social media, and archived news, Petitioner found no current or past offerings of Registrant's Goods under or in connection with the SLB mark by Registrant in the United States.

8. On information and belief, at the time the '436 Registration issued on January 1, 2019 and since then, Registrant did not use the SLB mark that is the subject of the '436 Registration in U.S. commerce in connection with any of Registrant's Goods.

9. On information and belief, Registrant did not intend to use the SLB mark that is the subject of the '436 Registration in U.S. commerce in connection with any of Registrant's Goods at the time the '436 Registration was filed on May 22, 2018.

10. On information and belief, Registrant has not used the SLB mark in the '436 Registration in connection with Registrant's goods for a period of at least three (3) years following the issue date of the '436 Registration and intends not to begin such use.

11. As a result of the lack of use in commerce by Registrant of the SLB mark in connection with Registrant's Goods for at least three (3) years following the issue date of the '436 Registration, Registrant is presumed to have abandoned the SLB mark with respect to Registrant's Goods in Class 7 of the '436 Registration.

12. Accordingly, because Registrant has abandoned the '436 Registration with respect to Registrant's Goods in Class 7, the '436 Registration is subject to cancellation pursuant to 15 U.S.C. § 1064(3).

Wherefore, Petitioner respectfully prays that its cancellation be sustained and the '436 Registration be cancelled from the Principal Register.

Dated: May 2, 2023

Respectfully Submitted,

/s/ Puja Detjen

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Attorneys for Petitioner
Schlumberger Limited
(Schlumberger N.V.)

EXHIBIT A

Generated on: This page was generated by TSDR on 2023-05-02 17:03:34 EDT

Mark: SLB



US Serial Number: 97640756

Application Filing Date: Oct. 20, 2022

Register: Principal

Mark Type: Trademark, Service Mark

TM5 Common Status Descriptor:



LIVE/APPLICATION/Under Examination

The trademark application has been accepted by the Office (has met the minimum filing requirements) and that this application has been assigned to an examiner.

Status: A non-final Office action has been sent (issued) to the applicant. This is a letter from the examining attorney requiring additional information and/or making an initial refusal. The applicant must respond to this Office action. To view all documents in this file, click on the Trademark Document Retrieval link at the top of this page.

Status Date: Nov. 08, 2022

Mark Information

Mark Literal Elements: SLB

Standard Character Claim: No

Mark Drawing Type: 3 - AN ILLUSTRATION DRAWING WHICH INCLUDES WORD(S)/ LETTER(S)/NUMBER(S)

Description of Mark: The mark consists of a blue stylized wedge sloping toward a smaller blue inverted stylized wedge, the letters, slb in blue above the horizontal plane of the smaller inverted stylized wedge.

Color Drawing: Yes

Color(s) Claimed: The color(s) blue is/are claimed as a feature of the mark.

Design Search Code(s): 26.05.13 - Two triangles; Triangles, exactly two triangles
26.05.25 - Triangles with one or more curved sides
26.13.13 - Two quadrilaterals; Quadrilateral (two quadrilaterals)
26.13.21 - Quadrilaterals that are completely or partially shaded
26.13.25 - Quadrilaterals with one or more curved sides

Related Properties Information

International Registration Number:

International Application(s) /Registration(s) Based on this Property: A0128753

Goods and Services

Note:

The following symbols indicate that the registrant/owner has amended the goods/services:

- Brackets [...] indicate deleted goods/services;
- Double parenthesis ((.)) identify any goods/services not claimed in a Section 15 affidavit of incontestability; and
- Asterisks *..* identify additional (new) wording in the goods/services.

For: Acids used in oil and gas exploration and production; hydraulic fluid; chemical preparations, namely, cleaning solvents used in oil and

gas exploration and production; chemicals used in oil drilling; drilling muds for use in oil and gas well drilling; chemicals for welding; gases for welding; metal welding flux; chemical drilling fluids for use in subterranean wells, namely, drilling muds, completion fluids, workover fluids and wellbore fluids; chemical additives for use with drilling fluids; chemical drilling fluids for use in oil well drilling; hydrogen as energy carrier; and lithium as part of a renewable energy system

International Class(es): 001 - Primary Class

U.S Class(es): 001, 005, 006, 010, 026, 046

Class Status: ACTIVE

Basis: 1(b)

For: Oil, gas, geothermal, water development, and carbon dioxide field equipment, namely, drilling rig mechanization machines and devices consisting of locks, nipples, expandables, cones, flow control devices, isolation valves, liner hangers, couplings, bushings, flotation equipment, centralizer equipment, manifolds, collars, monitoring devices, multilateral devices, packing devices, cables, retainers, stabilizers, hold openers, under reamers, whip stocks, mills, seals, plugs, drill bits, drill stems, drilling motors, drilling machines, drilling hammers, drilling impact tools, milling assemblies, percussion hammers, tongs, tubes, tubing, cutters, swivels, casing and tubing patches, injection equipment, swages, shakers, desanders, desilters, mud cleaning equipment, centrifuges, fluid processing equipment, straddles, spears, half-mule shoes, guide shoes, burn shoes, washover shoes, vacuums, retrieving tools, fishing tools, drilling rigs, bearings for use in drilling machines, rotors used in drilling machines, packers, stators being parts of drilling rigs machines, safety valves, rotating control devices, banding equipment, hangars, screening equipment, sensors, inflow control tools, slicklines, perforating devices, pumps, tubing, pipes, pipe joints, safety joints, accelerators, scrapers, exchangers, casings, cables, gas lifting devices, fluid separators, meters, power and control equipment, boosting equipment, vibration detectors, anchors, imaging equipment, wells, storage devices, tanks, hydraulic equipment, apparatus for the remote observation and operation of oil and gas drilling equipment, flow monitoring devices and thermometers all being devices for use with and part of drilling mechanization machines; pumps for use in irrigation systems; parts of oilfield wellhead machines, namely, chokes, degassers, and centrifuges. power operated pressure control equipment consisting of parts of oilfield wellhead machines, namely, chokes, degassers, centrifugal degassers, hydrogen sulfide mud gas separators, dual mud gas separators for horizontal drilling; rubber and metal mechanical o-ring seals used in equipment for oil and gas exploration and production; cutting machines and machine tools, namely, powered machines for cutting or shaping or finishing metals or other materials; precision machine tools, namely, hard metal tools, high speed steel (HSS) tools, carbide tools, ceramic tools, poly crystalline diamond (PCD) tools, and diamond-coated and diamond-uncoated tools, and hard metal tools, all for use in the cutting and forming of material by others; mechanical seals; air-operated power tools, namely, drills, grinders, and millers; drills for the mining industry; electric drills; pneumatic drills; power drills; power tools, namely, reamers; electric welding machines; laser welding machines; friction-stir welding tools; friction-stir welding machines; bits for mining machines; bits for power drills; core drilling bits; mining bits; tool bits for machines; bearings, as parts of machines; roller bearings for machines; pump diaphragms; machines, namely, cementing equipment used in oil and gas exploration and production

International Class(es): 007 - Primary Class

U.S Class(es): 013, 019, 021, 023, 024, 031, 034, 035

Class Status: ACTIVE

Basis: 1(b)

For: Scientific, nautical, surveying, photographic, cinematographic, optical, weighing, measuring, signaling, checking (supervision), life-saving and teaching apparatus and instruments; apparatus and instruments for conducting, switching, transforming, accumulating, regulating or controlling electricity; apparatus for recording, transmission or reproduction of sound or images; magnetic data carriers, recording discs; automatic vending machines and mechanisms for coin-operated apparatus; cash registers, calculating machines, data processing equipment and computers; fire extinguishing apparatus; computer software and manuals distributed therewith to process data used for oil and gas exploration and production in locating, evaluating and producing hydrocarbons; firmware for digital enablement of oilfield tools; automated self-contained electronic surveillance devices that can be deployed to gather information in oil and gas exploration and production facilities; testing and measuring equipment used in oil and gas exploration and production facilities to test performance and efficiency of oil and gas well equipment; petroleum industry equipment, namely, electronic rig instrumentation for monitoring well pressure and volume of returned drilling fluid; micro-processor computer controlled rig floor monitors which monitor and display various drilling functions with alarms; electronic pit volume totalizers and return flow sensors for use in blow-out prevention or monitoring of drilling fluid pressure, temperature, viscosity, and composition; electronic drilling recorders, namely, micro-processor controlled drilling mud logging equipment for use in logging drilling fluid pressure, temperature, viscosity and composition; electric cables, fiber optic cables; cement testing machines; laser welding devices; welding electrodes; welding transformers; magnets for industrial purposes; magnets used in oil and gas exploration and production; equipment for the production of hydrogen energy; equipment used in the lithium extraction process; equipment for the capture and storage of carbon, equipment for the use of geoenery or geothermal power; computer software

International Class(es): 009 - Primary Class

U.S Class(es): 021, 023, 026, 036, 038

Class Status: ACTIVE

Basis: 1(b)

For: Tractors used in oil and gas exploration and production; trucks equipped with apparatus to conduct services well testing, evaluating, drilling, completing, producing and repairing rendered in connection with oil and gas wells, and for acquiring, processing, interpreting, storing, presenting and transmitting from one location to another of well site logging data; boats and barges equipped with pumping equipment for fracturing, acidizing, cementing, and sand control in connection with oil and gas wells; land vehicles for cable inspection and on-site oil and gas well measurements

International Class(es): 012 - Primary Class

U.S Class(es): 019, 021, 023, 031, 035, 044

Class Status: ACTIVE

Basis: 1(b)

For: Explosive substances and projectiles, such as shaped charges, for use in perforating metal casing lining and oil well along with the

adjoining earth formation. Explosive substances and projectiles, such as shaped charges, for use in perforating metal casing lining and oil well along with the adjoining earth formation

International Class(es): 013 - Primary Class

U.S Class(es): 002, 009

Class Status: ACTIVE

Basis: 1(b)

For: Managing the exploration, production and operations of gas and oil properties for others; advertising and marketing services, namely, promoting the goods and services of others in the fields of oil and gas exploration and production; online supply and procurement for others, namely, purchasing of goods and services related to the fields of oil and gas exploration and production; providing a database featuring oil and gas properties for possible leasing or acquisition; providing an online database consisting of regulatory information in the fields of oil and gas exploration and production for business purposes; transportation logistics services, namely, planning and scheduling of drilling rigs and vessels used in oil and gas exploration and production; data processing services in the fields of oil and gas exploration and production; business consulting services for the energy industry related to establishing and improving business functions, namely, corporate and project strategies, organization management, operations management, operations improvement, technology management, mergers and acquisitions, and company integration

International Class(es): 035 - Primary Class

U.S Class(es): 100, 101, 102

Class Status: ACTIVE

Basis: 1(b)

For: Construction project management services for others in the fields of oil and gas exploration and production; oil and gas drilling; consulting services in the fields of oil and gas well drilling; sand control services related to the fields of oil and gas well drilling; fishing and retrieval services in the fields of oil and gas well drilling; artificial lift services in the fields of oil and gas well drilling; provision of equipment used to separate oil from water; rental of tools and drilling equipment in connection with the fields of geothermal resources, water management, and carbon dioxide storage and containment; repair and maintenance of oil and gas drilling equipment and facilities; subterranean well drilling services; rental of tractors used in oil and gas exploration and production; cementing services for oil and gas wells; waste oil collection for recycling; drilling of wells; rental of drilling platforms; installation and maintenance of irrigation systems; irrigation devices, installation and repair; perforating services in connection with the oil and gas industries; rental of equipment used in connection with irrigation services and oil and gas exploration and production

International Class(es): 037 - Primary Class

U.S Class(es): 100, 103, 106

Class Status: ACTIVE

Basis: 1(b)

For: Educational services, namely, conducting classes, seminars, conferences, and workshops in the fields of oil and gas exploration, measurement, detection, and production, geothermal resources, water management, storage and containment of carbon dioxide, and environmental issues and distribution of course material in connection therewith

International Class(es): 041 - Primary Class

U.S Class(es): 100, 101, 107

Class Status: ACTIVE

Basis: 1(b)

For: Providing information, news and commentary in the fields of oil and gas exploration; technical support services, namely, troubleshooting of computer software problems used in the fields of oil and gas exploration and production; updating of computer software for others; providing technical information updates of computer software used in the fields of oil and gas exploration and production; computer software consultation; consultation services in the fields of selection, testing, implementation and use of computer hardware and software systems for others; providing online information in the fields of computer software used in the fields of oil and gas exploration and production; testing, analysis, and evaluation of oil and gas reserves; oil and gas well drilling services, namely, providing measurements and downhole telemetry while drilling; engineering services in the field of environmental compliance; conducting environmental studies in the fields of oil and gas exploration and production, geothermal resources, water management, storage and containment or carbon dioxide; oil and gas well logging, testing, analysis, inspection, and sampling; performing oil and gas well diagnostics; oil and gas well surveying; surveying of oil-bearing seams; non-medical ultrasound imaging services in connection with oil and gas exploration; conducting magnetic resonance imaging interpretation and analysis for the oil and gas industries; recovery services in the fields of oil and gas exploration and production; to retrieve instruments and tools lost in a well; remedial services in the field of oil and gas production to restore a well to higher production levels; computer modeling services, namely, computer simulation of drilling processes and operation of facilities used in oil and gas exploration and production; engineering modeling and design of drilling processes and operation of facilities used in oil and gas exploration and production; digital solutions in the fields of oil and gas exploration and production for the optimization of production, including cloud based solutions, software-as-a-service solutions, machine learning, artificial intelligence, and on-premise solutions; design of seismic acquisition parameters, namely, models or plans for acquiring seismic data used in connection with oil and gas drilling operations; interpretation and analysis for the petroleum industry in methods and products for interpreting oil and gas well data obtained during the provision of testing services; providing early production and extended well test facilities and plants for others to allow production of oil and gas while full field development is being planned and permanent facilities are being built; subterranean well testing services for use in connection with subterranean oil well drilling operations; engineering services in connection with the selection and use of specialized equipment for subterranean well drilling operations and providing technical advice on drilling fluids and drilling fluid use and technical advice on data control, products control, and pressure control; providing oil well pressure control testing services for others in the oil and gas industries; oil and gas exploration; engineering, consulting, and testing services in connection with exploring and developing geothermal resources, water management, and carbon dioxide storage and containment; software rental services in connection with the fields of geothermal resources, water management and carbon dioxide storage and containment; carbon capture and storage services; lithium extraction services; geothermal power production and distribution services; and hydrogen production, storage and distribution services

International Class(es): 042 - Primary Class

U.S Class(es): 100, 101

Class Status: ACTIVE

Basis: 1(b)

Basis Information (Case Level)

Filed Use: No	Currently Use: No
Filed ITU: Yes	Currently ITU: Yes
Filed 44D: No	Currently 44E: No
Filed 44E: No	Currently 66A: No
Filed 66A: No	Currently No Basis: No
Filed No Basis: No	

Current Owner(s) Information

Owner Name: Schlumberger Limited (Schlumberger N.V.)

Owner Address: 5599 San Felipe Street
Houston, TEXAS UNITED STATES 77056

Legal Entity Type: COMPANY

State or Country Where Organized: CURACAO

Attorney/Correspondence Information

Attorney of Record

Attorney Name: Tim Curington

Docket Number: SLBR/T004US

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Attorney Email Authorized: Yes

Correspondent

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Correspondent e-mail Authorized: Yes

Domestic Representative - Not Found

Prosecution History

Date	Description	Proceeding Number
Nov. 08, 2022	NOTIFICATION OF NON-FINAL ACTION E-MAILED	
Nov. 08, 2022	NON-FINAL ACTION E-MAILED	
Nov. 08, 2022	NON-FINAL ACTION WRITTEN	88206
Nov. 08, 2022	NOTICE OF DESIGN SEARCH CODE E-MAILED	
Nov. 07, 2022	ASSIGNED TO EXAMINER	88206
Nov. 05, 2022	NEW APPLICATION OFFICE SUPPLIED DATA ENTERED	
Oct. 24, 2022	NEW APPLICATION ENTERED	

TM Staff and Location Information

TM Staff Information

TM Attorney: REEVES, APRIL ELIZABET

Law Office Assigned: LAW OFFICE 124

File Location

Current Location: TMO LAW OFFICE 124 - EXAMINING ATTORNEY ASSIGNED

Date in Location: Nov. 08, 2022

Generated on: This page was generated by TSDR on 2023-05-02 17:03:17 EDT

Mark: SLB



US Serial Number: 97640752

Application Filing Date: Oct. 20, 2022

Register: Principal

Mark Type: Trademark, Service Mark

TM5 Common Status Descriptor:



LIVE/APPLICATION/Under Examination

The trademark application has been accepted by the Office (has met the minimum filing requirements) and that this application has been assigned to an examiner.

Status: A non-final Office action has been sent (issued) to the applicant. This is a letter from the examining attorney requiring additional information and/or making an initial refusal. The applicant must respond to this Office action. To view all documents in this file, click on the Trademark Document Retrieval link at the top of this page.

Status Date: Nov. 08, 2022

Mark Information

Mark Literal Elements: SLB

Standard Character Claim: No

Mark Drawing Type: 3 - AN ILLUSTRATION DRAWING WHICH INCLUDES WORD(S)/ LETTER(S)/NUMBER(S)

Description of Mark: The mark consists of a stylized wedge sloping toward a smaller inverted stylized wedge, the letters, slb above the horizontal plane of the smaller inverted stylized wedge.

Color(s) Claimed: Color is not claimed as a feature of the mark.

Design Search Code(s): 26.05.13 - Two triangles; Triangles, exactly two triangles
26.05.25 - Triangles with one or more curved sides
26.13.13 - Two quadrilaterals; Quadrilateral (two quadrilaterals)
26.13.21 - Quadrilaterals that are completely or partially shaded
26.13.25 - Quadrilaterals with one or more curved sides

Related Properties Information

International Registration Number:

International Application(s) /Registration(s) Based on this Property: A0128769, A0128927

Goods and Services

Note:

The following symbols indicate that the registrant/owner has amended the goods/services:

- Brackets [...] indicate deleted goods/services;
- Double parenthesis (()) identify any goods/services not claimed in a Section 15 affidavit of incontestability; and
- Asterisks *..* identify additional (new) wording in the goods/services.

For: Acids used in oil and gas exploration and production; hydraulic fluid; chemical preparations, namely, cleaning solvents used in oil and gas exploration and production; chemicals used in oil drilling; drilling muds for use in oil and gas well drilling; chemicals for welding;

gases for welding; metal welding flux; chemical drilling fluids for use in subterranean wells, namely, drilling muds, completion fluids, workover fluids and wellbore fluids; chemical additives for use with drilling fluids; chemical drilling fluids for use in oil well drilling; hydrogen as energy carrier; and lithium as part of a renewal energy system

International Class(es): 001 - Primary Class

U.S Class(es): 001, 005, 006, 010, 026, 046

Class Status: ACTIVE

Basis: 1(b)

For: Oil, gas, geothermal, water development, and carbon dioxide field equipment, namely, drilling rig mechanization machines and devices consisting of locks, nipples, expandables, cones, flow control devices, isolation valves, liner hangers, couplings, bushings, flotation equipment, centralizer equipment, manifolds, collars, monitoring devices, multilateral devices, packing devices, cables, retainers, stabilizers, hold openers, under reamers, whip stocks, mills, seals, plugs, drill bits, drill stems, drilling motors, drilling machines, drilling hammers, drilling impact tools, milling assemblies, percussion hammers, tongs, tubes, tubing, cutters, swivels, casing and tubing patches, injection equipment, swages, shakers, desanders, desilters, mud cleaning equipment, centrifuges, fluid processing equipment, straddles, spears, half-mule shoes, guide shoes, burn shoes, washover shoes, vacuums, retrieving tools, fishing tools, drilling rigs, bearings for use in drilling machines, rotors used in drilling machines, packers, stators being parts of drilling rigs machines, safety valves, rotating control devices, banding equipment, hangars, screening equipment, sensors, inflow control tools, slicklines, perforating devices, pumps, tubing, pipes, pipe joints, safety joints, accelerators, scrapers, exchangers, casings, cables, gas lifting devices, fluid separators, meters, power and control equipment, boosting equipment, vibration detectors, anchors, imaging equipment, wells, storage devices, tanks, hydraulic equipment, apparatus for the remote observation and operation of oil and gas drilling equipment, flow monitoring devices and thermometers all being devices for use with and part of drilling mechanization machines; pumps for use in irrigation systems; parts of oilfield wellhead machines, namely, chokes, degassers, and centrifuges. power operated pressure control equipment consisting of parts of oilfield wellhead machines, namely, chokes, degassers, centrifugal degassers, hydrogen sulfide mud gas separators, dual mud gas separators for horizontal drilling; rubber and metal mechanical o-ring seals used in equipment for oil and gas exploration and production; cutting machines and machine tools, namely, powered machines for cutting or shaping or finishing metals or other materials; precision machine tools, namely, hard metal tools, high speed steel (HSS) tools, carbide tools, ceramic tools, poly crystalline diamond (PCD) tools, and diamond-coated and diamond-uncoated tools, and hard metal tools, all for use in the cutting and forming of material by others; mechanical seals; air-operated power tools, namely, drills, grinders, and millers; drills for the mining industry; electric drills; pneumatic drills; power drills; power tools, namely, reamers; electric welding machines; laser welding machines; friction-stir welding tools; friction-stir welding machines; bits for mining machines; bits for power drills; core drilling bits; mining bits; tool bits for machines; bearings, as parts of machines; roller bearings for machines; pump diaphragms; machines, namely, cementing equipment used in oil and gas exploration and production

International Class(es): 007 - Primary Class

U.S Class(es): 013, 019, 021, 023, 024, 031, 034, 035

Class Status: ACTIVE

Basis: 1(b)

For: Scientific, nautical, surveying, photographic, cinematographic, optical, weighing, measuring, signaling, checking (supervision), life-saving and teaching apparatus and instruments; apparatus and instruments for conducting, switching, transforming, accumulating, regulating or controlling electricity; apparatus for recording, transmission or reproduction of sound or images; magnetic data carriers, recording discs; automatic vending machines and mechanisms for coin-operated apparatus; cash registers, calculating machines, data processing equipment and computers; fire extinguishing apparatus; computer software and manuals distributed therewith to process data used for oil and gas exploration and production in locating, evaluating and producing hydrocarbons; firmware for digital enablement of oilfield tools; automated self-contained electronic surveillance devices that can be deployed to gather information in oil and gas exploration and production facilities; testing and measuring equipment used in oil and gas exploration and production facilities to test performance and efficiency of oil and gas well equipment; petroleum industry equipment, namely, electronic rig instrumentation for monitoring well pressure and volume of returned drilling fluid; micro-processor computer controlled rig floor monitors which monitor and display various drilling functions with alarms; electronic pit volume totalizers and return flow sensors for use in blow-out prevention or monitoring of drilling fluid pressure, temperature, viscosity, and composition; electronic drilling recorders, namely, micro-processor controlled drilling mud logging equipment for use in logging drilling fluid pressure, temperature, viscosity and composition; electric cables, fiber optic cables; cement testing machines; laser welding devices; welding electrodes; welding transformers; magnets for industrial purposes; magnets used in oil and gas exploration and production; equipment for the production of hydrogen energy; equipment used in the lithium extraction process; equipment for the capture and storage of carbon, equipment for the use of geenergy or geothermal power; computer software

International Class(es): 009 - Primary Class

U.S Class(es): 021, 023, 026, 036, 038

Class Status: ACTIVE

Basis: 1(b)

For: Tractors used in oil and gas exploration and production; trucks equipped with apparatus to conduct services well testing, evaluating, drilling, completing, producing and repairing rendered in connection with oil and gas wells, and for acquiring, processing, interpreting, storing, presenting and transmitting from one location to another of well site logging data; boats and barges equipped with pumping equipment for fracturing, acidizing, cementing, and sand control in connection with oil and gas wells; land vehicles for cable inspection and on-site oil and gas well measurements

International Class(es): 012 - Primary Class

U.S Class(es): 019, 021, 023, 031, 035, 044

Class Status: ACTIVE

Basis: 1(b)

For: Explosive substances and projectiles, such as shaped charges, for use in perforating metal casing lining and oil well along with the adjoining earth formation. Explosive substances and projectiles, such as shaped charges, for use in perforating metal casing lining and

oil well along with the adjoining earth formation

International Class(es): 013 - Primary Class

U.S Class(es): 002, 009

Class Status: ACTIVE

Basis: 1(b)

For: Managing the exploration, production and operations of gas and oil properties for others; advertising and marketing services, namely, promoting the goods and services of others in the fields of oil and gas exploration and production; online supply and procurement for others, namely, purchasing of goods and services related to the fields of oil and gas exploration and production; providing a database featuring oil and gas properties for possible leasing or acquisition; providing an online database consisting of regulatory information in the fields of oil and gas exploration and production for business purposes; transportation logistics services, namely, planning and scheduling of drilling rigs and vessels used in oil and gas exploration and production; data processing services in the fields of oil and gas exploration and production; business consulting services for the energy industry related to establishing and improving business functions, namely, corporate and project strategies, organization management, operations management, operations improvement, technology management, mergers and acquisitions, and company integration

International Class(es): 035 - Primary Class

U.S Class(es): 100, 101, 102

Class Status: ACTIVE

Basis: 1(b)

For: Construction project management services for others in the fields of oil and gas exploration and production; oil and gas drilling; consulting services in the fields of oil and gas well drilling; sand control services related to the fields of oil and gas well drilling; fishing and retrieval services in the fields of oil and gas well drilling; artificial lift services in the fields of oil and gas well drilling; provision of equipment used to separate oil from water; rental of tools and drilling equipment in connection with the fields of geothermal resources, water management, and carbon dioxide storage and containment; repair and maintenance of oil and gas drilling equipment and facilities; subterranean well drilling services; rental of tractors used in oil and gas exploration and production; cementing services for oil and gas wells; waste oil collection for recycling; drilling of wells; rental of drilling platforms; installation and maintenance of irrigation systems; irrigation devices, installation and repair; perforating services in connection with the oil and gas industries; rental of equipment used in connection with irrigation services and oil and gas exploration and production

International Class(es): 037 - Primary Class

U.S Class(es): 100, 103, 106

Class Status: ACTIVE

Basis: 1(b)

For: Educational services, namely, conducting classes, seminars, conferences, and workshops in the fields of oil and gas exploration, measurement, detection, and production, geothermal resources, water management, storage and containment of carbon dioxide, and environmental issues and distribution of course material in connection therewith

International Class(es): 041 - Primary Class

U.S Class(es): 100, 101, 107

Class Status: ACTIVE

Basis: 1(b)

For: Providing information, news and commentary in the fields of oil and gas exploration; technical support services, namely, troubleshooting of computer software problems used in the fields of oil and gas exploration and production; updating of computer software for others; providing technical information updates of computer software used in the fields of oil and gas exploration and production; computer software consultation; consultation services in the fields of selection, testing, implementation and use of computer hardware and software systems for others; providing online information in the fields of computer software used in the fields of oil and gas exploration and production; testing, analysis, and evaluation of oil and gas reserves; oil and gas well drilling services, namely, providing measurements and downhole telemetry while drilling; engineering services in the field of environmental compliance; conducting environmental studies in the fields of oil and gas exploration and production, geothermal resources, water management, storage and containment or carbon dioxide; oil and gas well logging, testing, analysis, inspection, and sampling; performing oil and gas well diagnostics; oil and gas well surveying; surveying of oil-bearing seams; non-medical ultrasound imaging services in connection with oil and gas exploration; conducting magnetic resonance imaging interpretation and analysis for the oil and gas industries; recovery services in the fields of oil and gas exploration and production; to retrieve instruments and tools lost in a well; remedial services in the field of oil and gas production to restore a well to higher production levels; computer modeling services, namely, computer simulation of drilling processes and operation of facilities used in oil and gas exploration and production; engineering modeling and design of drilling processes and operation of facilities used in oil and gas exploration and production; digital solutions in the fields of oil and gas exploration and production for the optimization of production, including cloud based solutions, software-as-a-service solutions, machine learning, artificial intelligence, and on-premise solutions; design of seismic acquisition parameters, namely, models or plans for acquiring seismic data used in connection with oil and gas drilling operations; interpretation and analysis for the petroleum industry in methods and products for interpreting oil and gas well data obtained during the provision of testing services; providing early production and extended well test facilities and plants for others to allow production of oil and gas while full field development is being planned and permanent facilities are being built; subterranean well testing services for use in connection with subterranean oil well drilling operations; engineering services in connection with the selection and use of specialized equipment for subterranean well drilling operations and providing technical advice on drilling fluids and drilling fluid use and technical advice on data control, products control, and pressure control; providing oil well pressure control testing services for others in the oil and gas industries; oil and gas exploration; engineering, consulting, and testing services in connection with exploring and developing geothermal resources, water management, and carbon dioxide storage and containment; software rental services in connection with the fields of geothermal resources, water management and carbon dioxide storage and containment; carbon capture and storage services; lithium extraction services; geothermal power production and distribution services; and hydrogen production, storage and distribution services

International Class(es): 042 - Primary Class

U.S Class(es): 100, 101

Class(es):

Class Status: ACTIVE

Basis: 1(b)

Basis Information (Case Level)

Filed Use: No

Filed ITU: Yes

Filed 44D: No

Filed 44E: No

Filed 66A: No

Filed No Basis: No

Currently Use: No

Currently ITU: Yes

Currently 44E: No

Currently 66A: No

Currently No Basis: No

Current Owner(s) Information

Owner Name: Schlumberger Limited (Schlumberger N.V.)

Owner Address: 5599 San Felipe Street
Houston, TEXAS UNITED STATES 77056

Legal Entity Type: COMPANY

State or Country Where Organized: CURACAO

Attorney/Correspondence Information

Attorney of Record

Attorney Name: Tim Curington

Docket Number: SLBR/T003US

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Attorney Email Authorized: Yes

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Correspondent e-mail Authorized: Yes

Domestic Representative - Not Found

Prosecution History

Date	Description	Proceeding Number
Nov. 08, 2022	NOTIFICATION OF NON-FINAL ACTION E-MAILED	
Nov. 08, 2022	NON-FINAL ACTION E-MAILED	
Nov. 08, 2022	NON-FINAL ACTION WRITTEN	88206
Nov. 08, 2022	NOTICE OF DESIGN SEARCH CODE E-MAILED	
Nov. 07, 2022	ASSIGNED TO EXAMINER	88206
Nov. 05, 2022	NEW APPLICATION OFFICE SUPPLIED DATA ENTERED	
Oct. 24, 2022	NEW APPLICATION ENTERED	

TM Staff and Location Information

TM Staff Information

TM Attorney: REEVES, APRIL ELIZABET

Law Office Assigned: LAW OFFICE 124

File Location

Current Location: TMO LAW OFFICE 124 - EXAMINING ATTORNEY ASSIGNED

Date in Location: Nov. 08, 2022

EXHIBIT B

To: Tim Curington(psdocketing@pattersonsheridan.com)
Subject: U.S. Trademark Application Serial No. 97640756 - SLB - SLBR/T004US
Sent: November 08, 2022 01:57:04 PM EST
Sent As: tmng.notices@uspto.gov

Attachments

[5643436](#)
[screenshot-en-wikipedia-org-wiki-Bearing_-mechanical-16679272559591](#)
[97596686](#)

**United States Patent and Trademark Office (USPTO)
Office Action (Official Letter) About Applicant's Trademark Application**

U.S. Application Serial No. 97640756

Mark: SLB

Correspondence Address:

TIM CURINGTON
PATTERSON & SHERIDAN, LLP
24 GREENWAY PLAZA
SUITE 1600
HOUSTON TX 77046 UNITED STATES

Applicant: Schlumberger Limited (Schlumberger N.V.)

Reference/Docket No. SLBR/T004US

Correspondence Email Address: psdocketing@pattersonsheridan.com

NONFINAL OFFICE ACTION

The USPTO must receive applicant's response to this letter within six months of the issue date below or the application will be **abandoned.** Respond using the Trademark Electronic Application System (TEAS). A link to the appropriate TEAS response form appears at the end of this Office action.

Issue date: November 08, 2022

The referenced application has been reviewed by the assigned trademark examining attorney. Applicant

must respond timely and completely to the issue(s) below. 15 U.S.C. §1062(b); 37 C.F.R. §§2.62(a), 2.65(a); TMEP §§711, 718.03.

SUMMARY OF ISSUES:

- Refusal Under Section 2(d) - Likelihood of Confusion
- ADVISORY: Prior Pending Application - Mark Not Entitled to Register
- Identification of Goods and Services
- Entity Clarification Required

REFUSAL UNDER SECTION 2(d) - LIKELIHOOD OF CONFUSION
THIS REFUSAL APPLIES TO CLASS 7 ONLY

Registration of the applied-for mark is refused because of a likelihood of confusion with the mark in U.S. Registration No. 5643436. Trademark Act Section 2(d), 15 U.S.C. §1052(d); *see* TMEP §§1207.01 *et seq.* See the attached registration.

Applicant's mark is **SLB** (and design) for goods and services including "Oil, gas, geothermal, water development, and carbon dioxide field equipment, namely, drilling rig mechanization machines and devices consisting of locks, nipples, expandables, cones, flow control devices, isolation valves, liner hangers, couplings, bushings, flotation equipment, centralizer equipment, manifolds, collars, monitoring devices, multilateral devices, packing devices, cables, retainers, stabilizers, hold openers, under reamers, whip stocks, mills, seals, plugs, drill bits, drill stems, drilling motors, drilling machines, drilling hammers, drilling impact tools, milling assemblies, percussion hammers, tongs, tubes, tubing, cutters, swivels, casing and tubing patches, injection equipment, swages, shakers, desanders, desilters, mud cleaning equipment, centrifuges, fluid processing equipment, straddles, spears, half-mule shoes, guide shoes, burn shoes, washover shoes, vacuums, retrieving tools, fishing tools, drilling rigs, bearings for use in drilling machines, rotors used in drilling machines, packers, stators being parts of drilling rigs machines, safety valves, rotating control devices, banding equipment, hangars, screening equipment, sensors, inflow control tools, slicklines, perforating devices, pumps, tubing, pipes, pipe joints, safety joints, accelerators, scrapers, exchangers, casings, cables, gas lifting devices, fluid separators, meters, power and control equipment, boosting equipment, vibration detectors, anchors, imaging equipment, wells, storage devices, tanks, hydraulic equipment, apparatus for the remote observation and operation of oil and gas drilling equipment, flow monitoring devices and thermometers all being devices for use with and part of drilling mechanization machines; pumps for use in irrigation systems; parts of oilfield wellhead machines, namely, chokes, degassers, and centrifuges. power operated pressure control equipment consisting of parts of oilfield wellhead machines, namely, chokes, degassers, centrifugal degassers, hydrogen sulfide mud gas separators, dual mud gas separators for horizontal drilling; rubber and metal mechanical o-ring seals used in equipment for oil and gas exploration and production; cutting machines and machine tools, namely, powered machines for cutting or shaping or finishing metals or other materials; precision machine tools, namely, hard metal tools, high speed steel (HSS) tools, carbide tools, ceramic tools, poly crystalline diamond (PCD) tools, and diamond-coated and diamond-uncoated tools, and hard metal tools, all for use in the cutting and forming of material by others; mechanical seals; air-operated power tools, namely, drills, grinders, and millers; drills for the mining industry; electric drills; pneumatic drills; power drills; power tools, namely, reamers; electric welding machines; laser welding machines; friction-stir welding tools; friction-stir welding machines; bits for mining machines; bits for power drills; core drilling bits; mining bits; tool bits for machines; bearings,

as parts of machines; roller bearings for machines; pump diaphragms; machines, namely, cementing equipment used in oil and gas exploration and production” in International Class 7.

Registrant’s mark is **SLB** (in stylized form) for “Anti-friction bearings for machines; Bearing brackets for machines; Bearings for transmission shafts, being parts of machines; Bearings, as parts of machines; Engine bearings; Lubrication machines; Machine parts, namely, roll mill bearings; Piston rings; Roller bearings for machines; Shaft bearings for vacuum pumps” in International Class 7.

Trademark Act Section 2(d) bars registration of an applied-for mark that is so similar to a registered mark that it is likely consumers would be confused, mistaken, or deceived as to the commercial source of the goods and/or services of the parties. *See* 15 U.S.C. §1052(d). Likelihood of confusion is determined on a case-by-case basis by applying the factors set forth in *In re E. I. du Pont de Nemours & Co.*, 476 F.2d 1357, 1361, 177 USPQ 563, 567 (C.C.P.A. 1973) (called the “*du Pont* factors”). *In re i.am.symbolic, llc*, 866 F.3d 1315, 1322, 123 USPQ2d 1744, 1747 (Fed. Cir. 2017). Any evidence of record related to those factors need be considered; however, “not all of the *DuPont* factors are relevant or of similar weight in every case.” *In re Guild Mortg. Co.*, 912 F.3d 1376, 1379, 129 USPQ2d 1160, 1162 (Fed. Cir. 2019) (quoting *In re Dixie Rests., Inc.*, 105 F.3d 1405, 1406, 41 USPQ2d 1531, 1533 (Fed. Cir. 1997)).

Although not all *du Pont* factors may be relevant, there are generally two key considerations in any likelihood of confusion analysis: (1) the similarities between the compared marks and (2) the relatedness of the compared goods and/or services. *See In re i.am.symbolic, llc*, 866 F.3d at 1322, 123 USPQ2d at 1747 (quoting *Herbko Int’l, Inc. v. Kappa Books, Inc.*, 308 F.3d 1156, 1164-65, 64 USPQ2d 1375, 1380 (Fed. Cir. 2002)); *Federated Foods, Inc. v. Fort Howard Paper Co.*, 544 F.2d 1098, 1103, 192 USPQ 24, 29 (C.C.P.A. 1976) (“The fundamental inquiry mandated by [Section] 2(d) goes to the cumulative effect of differences in the essential characteristics of the goods [or services] and differences in the marks.”); TMEP §1207.01.

Similarity of the Marks

When comparing marks, “[t]he proper test is not a side-by-side comparison of the marks, but instead whether the marks are sufficiently similar in terms of their commercial impression such that [consumers] who encounter the marks would be likely to assume a connection between the parties.” *Cai v. Diamond Hong, Inc.*, 901 F.3d 1367, 1373, 127 USPQ2d 1797, 1801 (Fed. Cir. 2018) (quoting *Coach Servs., Inc. v. Triumph Learning LLC*, 668 F.3d 1356, 1368, 101 USPQ2d 1713, 1721 (Fed. Cir. 2012)); TMEP §1207.01(b). The proper focus is on the recollection of the average purchaser, who retains a general rather than specific impression of trademarks. *In re Ox Paperboard, LLC*, 2020 USPQ2d 10878, at *4 (TTAB 2020) (citing *In re Bay State Brewing Co.*, 117 USPQ2d 1958, 1960 (TTAB 2016)); *In re Inn at St. John’s, LLC*, 126 USPQ2d 1742, 1746 (TTAB 2018); TMEP §1207.01(b); *see In re St. Helena Hosp.*, 774 F.3d 747, 750-51, 113 USPQ2d 1082, 1085 (Fed. Cir. 2014).

The respective marks, SLB and SLB, are highly similar in appearance, sound and meaning. The only difference is that registrant's mark is stylized and applicant's mark has a design.

However, the design and stylization elements of the marks do not obviate their similarity. For a composite mark containing both words and a design, the word portion may be more likely to be impressed upon a purchaser’s memory and to be used when requesting the goods and/or services. *Joel*

Gott Wines, LLC v. Rehoboth Von Gott, Inc., 107 USPQ2d 1424, 1431 (TTAB 2013) (citing *In re Dakin's Miniatures, Inc.*, 59 USPQ2d 1593, 1596 (TTAB 1999)); TMEP §1207.01(c)(ii); see *In re Viterra Inc.*, 671 F.3d 1358, 1362, 101 USPQ2d 1905, 1908, 1911 (Fed. Cir. 2012) (citing *CBS Inc. v. Morrow*, 708 F. 2d 1579, 1581-82, 218 USPQ 198, 200 (Fed. Cir 1983)). Thus, although such marks must be compared in their entireties, the word portion is often considered the dominant feature and is accorded greater weight in determining whether marks are confusingly similar, even where the word portion has been disclaimed. *In re Viterra Inc.*, 671 F.3d at 1366, 101 USPQ2d at 1911 (Fed. Cir. 2012) (citing *Giant Food, Inc. v. Nation's Foodservice, Inc.*, 710 F.2d 1565, 1570-71, 218 USPQ2d 390, 395 (Fed. Cir. 1983)).

Here, the respective designs do not make the marks distinct enough to avoid confusion because the literal elements of the marks are more significant or dominant than the designs. Thus, the marks are likely to be confused because both marks share the letters "SLB".

Thus, the applied-for mark is confusingly similar to the mark in the cited registration because the marks share the identical literal element, which gives the marks the same commercial impression.

Relatedness of the Goods

The applicant's "Oil, gas, geothermal, water development, and carbon dioxide field equipment, namely, drilling rig mechanization machines and devices consisting of locks, nipples, expandables, cones, flow control devices, isolation valves, liner hangers, couplings, bushings, flotation equipment, centralizer equipment, manifolds, collars, monitoring devices, multilateral devices, packing devices, cables, retainers, stabilizers, hold openers, under reamers, whip stocks, mills, seals, plugs, drill bits, drill stems, drilling motors, drilling machines, drilling hammers, drilling impact tools, milling assemblies, percussion hammers, tongs, tubes, tubing, cutters, swivels, casing and tubing patches, injection equipment, swages, shakers, desanders, desilters, mud cleaning equipment, centrifuges, fluid processing equipment, straddles, spears, half-mule shoes, guide shoes, burn shoes, washover shoes, vacuums, retrieving tools, fishing tools, drilling rigs, bearings for use in drilling machines, rotors used in drilling machines, packers, stators being parts of drilling rigs machines, safety valves, rotating control devices, banding equipment, hangars, screening equipment, sensors, inflow control tools, slicklines, perforating devices, pumps, tubing, pipes, pipe joints, safety joints, accelerators, scrapers, exchangers, casings, cables, gas lifting devices, fluid separators, meters, power and control equipment, boosting equipment, vibration detectors, anchors, imaging equipment, wells, storage devices, tanks, hydraulic equipment, apparatus for the remote observation and operation of oil and gas drilling equipment, flow monitoring devices and thermometers all being devices for use with and part of drilling mechanization machines; pumps for use in irrigation systems; parts of oilfield wellhead machines, namely, chokes, degassers, and centrifuges. power operated pressure control equipment consisting of parts of oilfield wellhead machines, namely, chokes, degassers, centrifugal degassers, hydrogen sulfide mud gas separators, dual mud gas separators for horizontal drilling; rubber and metal mechanical o-ring seals used in equipment for oil and gas exploration and production; cutting machines and machine tools, namely, powered machines for cutting or shaping or finishing metals or other materials; precision machine tools, namely, hard metal tools, high speed steel (HSS) tools, carbide tools, ceramic tools, poly crystalline diamond (PCD) tools, and diamond-coated and diamond-uncoated tools, and hard metal tools, all for use in the cutting and forming of material by others; mechanical seals; air-operated power tools, namely, drills, grinders, and millers; drills for the mining industry; electric drills; pneumatic drills; power drills; power tools, namely, reamers; electric welding machines; laser welding machines; friction-stir welding tools; friction-stir welding machines; bits for mining

machines; bits for power drills; core drilling bits; mining bits; tool bits for machines; bearings, as parts of machines; roller bearings for machines; pump diaphragms; machines, namely, cementing equipment used in oil and gas exploration and production” are closely related to the registrant’s “Anti-friction bearings for machines; Bearing brackets for machines; Bearings for transmission shafts, being parts of machines; Bearings, as parts of machines; Engine bearings; Lubrication machines; Machine parts, namely, roll mill bearings; Piston rings; Roller bearings for machines; Shaft bearings for vacuum pumps” because these goods are broad enough to overlap, and are otherwise complementary.

Determining likelihood of confusion is based on the description of the goods and/or services stated in the application and registration at issue, not on extrinsic evidence of actual use. *See In re Detroit Athletic Co.*, 903 F.3d 1297, 1307, 128 USPQ2d 1047, 1052 (Fed. Cir. 2018) (citing *In re i.am.symbolic, llc*, 866 F.3d 1315, 1325, 123 USPQ2d 1744, 1749 (Fed. Cir. 2017)).

In this case, the registration uses broad wording to describe "bearings, as parts of machines," which presumably encompasses all goods of the type described, including applicant’s more narrow "bearings for use in drilling machines." *See, e.g., In re Solid State Design Inc.*, 125 USPQ2d 1409, 1412-15 (TTAB 2018); *Sw. Mgmt., Inc. v. Ocinomled, Ltd.*, 115 USPQ2d 1007, 1025 (TTAB 2015). Thus, applicant’s and registrant’s goods are legally identical in part. *See, e.g., In re i.am.symbolic, llc*, 127 USPQ2d 1627, 1629 (TTAB 2018) (citing *Tuxedo Monopoly, Inc. v. Gen. Mills Fun Grp., Inc.*, 648 F.2d 1335, 1336, 209 USPQ 986, 988 (C.C.P.A. 1981); *Inter IKEA Sys. B.V. v. Akea, LLC*, 110 USPQ2d 1734, 1745 (TTAB 2014); *Baseball Am. Inc. v. Powerplay Sports Ltd.*, 71 USPQ2d 1844, 1847 n.9 (TTAB 2004)).

Additionally, the parties' goods are complementary. The goods and/or services are compared to determine whether they are similar, commercially related, or travel in the same trade channels. *See Coach Servs., Inc. v. Triumph Learning LLC*, 668 F.3d 1356, 1369-71, 101 USPQ2d 1713, 1722-23 (Fed. Cir. 2012); *Herbko Int’l, Inc. v. Kappa Books, Inc.*, 308 F.3d 1156, 1165, 64 USPQ2d 1375, 1381 (Fed. Cir. 2002); TMEP §§1207.01, 1207.01(a)(vi).

The compared goods and/or services need not be identical or even competitive to find a likelihood of confusion. *See On-line Careline Inc. v. Am. Online Inc.*, 229 F.3d 1080, 1086, 56 USPQ2d 1471, 1475 (Fed. Cir. 2000); *Recot, Inc. v. Becton*, 214 F.3d 1322, 1329, 54 USPQ2d 1894, 1898 (Fed. Cir. 2000); TMEP §1207.01(a)(i). They need only be “related in some manner and/or if the circumstances surrounding their marketing are such that they could give rise to the mistaken belief that [the goods and/or services] emanate from the same source.” *Coach Servs., Inc. v. Triumph Learning LLC*, 668 F.3d 1356, 1369, 101 USPQ2d 1713, 1722 (Fed. Cir. 2012) (quoting *7-Eleven Inc. v. Wechsler*, 83 USPQ2d 1715, 1724 (TTAB 2007)); TMEP §1207.01(a)(i).

In this case, the attached internet evidence and identifications of goods show that applicant's goods consist of machines and machine parts, and registrant's goods are bearings, which are machine parts that restrict movement and reduce friction between moving parts in machines. This evidence establishes that the goods are similar or complementary in terms of purpose or function because registrant's goods serve as components of applicant's goods. Thus, applicant’s and registrant’s goods are considered related for likelihood of confusion purposes. *See, e.g., In re Davey Prods. Pty Ltd.*, 92 USPQ2d 1198, 1202-04 (TTAB 2009); *In re Toshiba Med. Sys. Corp.*, 91 USPQ2d 1266, 1268-69, 1271-72 (TTAB 2009).

In summary, the applicant’s and registrant’s marks are confusingly similar, and the respective goods are highly related. Therefore, consumers are likely to be confused and mistakenly believe that these goods

emanate from a common source. Accordingly, registration must be refused under Section 2(d) of the Trademark Act.

Although applicant's mark has been refused registration, applicant may respond to the refusal(s) by submitting evidence and arguments in support of registration.

ADVISORY: PRIOR PENDING APPLICATION - MARK NOT ENTITLED TO REGISTER

The filing date of pending U.S. Application Serial No. 97596686 precedes applicant's filing date. See attached referenced application. If the mark in the referenced application registers, applicant's mark may be refused registration under Trademark Act Section 2(d) because of a likelihood of confusion between the two marks. *See* 15 U.S.C. §1052(d); 37 C.F.R. §2.83; TMEP §§1208 *et seq.* Therefore, upon receipt of applicant's response to this Office action, action on this application may be suspended pending final disposition of the earlier-filed referenced application.

In response to this Office action, applicant may present arguments in support of registration by addressing the issue of the potential conflict between applicant's mark and the mark in the referenced application. Applicant's election not to submit arguments at this time in no way limits applicant's right to address this issue later if a refusal under Section 2(d) issues.

Ownership of Mark in Potentially Conflicting Application

If the mark(s) in the potentially conflicting prior-filed application(s) has been assigned to applicant, applicant may provide evidence of ownership of the mark(s) to avoid a possible refusal under Trademark Act Section 2(d) based on a likelihood of confusion. *See* 15 U.S.C. §1052(d); TMEP §812.01.

Applicant may provide evidence of ownership of the mark(s) by satisfying one of the following:

(1) Record the assignment with the USPTO's Assignment Recordation Branch (ownership transfer documents such as assignments can be filed online at <http://etas.uspto.gov>) and promptly notify the trademark examining attorney that the assignment has been duly recorded;

(2) Submit copies of documents evidencing the chain of title; or

(3) Submit the following statement, **verified with an affidavit or signed declaration** under 37 C.F.R. §2.20: **"Applicant is the owner of Application Serial No(s). 97596686."** To provide this statement using the Trademark Electronic Application System (TEAS), use the **"Response to Office Action"** form; answer "yes" to wizard questions #3 and #9; then, continuing on to the next portion of the form, in the "Additional Statement(s)" section, check the box for "Miscellaneous Statement" and write in the free form text field for the "Miscellaneous Statement" that "Applicant is the owner of Application Serial No(s). 97596686," inserting the relevant application serial number(s); and follow the instructions within the form for signing. The form must be signed twice; a signature is required both in the "Declaration Signature" section and in the "Response Signature" section.

TMEP §812.01; *see* 15 U.S.C. §1060; 37 C.F.R. §§2.193(e)(1), 3.25, 3.73(a)-(b); TMEP §502.02(a).

Recording a document with the Assignment Recordation Branch does not constitute a response to an Office action. TMEP §503.01(d).

IDENTIFICATION OF GOODS AND SERVICES

The identification of goods and services must be amended because some wording is indefinite, too broad, and misclassified.

Class 1

The wording “acids for use in oil and gas exploration and production” in the identification of goods is indefinite and must be clarified because the type of acid provided is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: “boric acid.”

The wording “chemical preparations, namely, cleaning solvents used in oil and gas exploration and production” in the identification of goods for International Class 1 must be clarified because it is too broad and could include goods in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. In particular, this wording could encompass "chemical cleaners" in Class 3.

Applicant may incorporate the following wording, if accurate: "degreasing solvents" in Class 1.

Class 7

The wording “Oil, gas, geothermal, water development, and carbon dioxide field equipment, namely, drilling rig mechanization machines and devices consisting of locks, nipples, expandables, cones, flow control devices, isolation valves, liner hangers, couplings, bushings, flotation equipment, centralizer equipment, manifolds, collars, monitoring devices, multilateral devices, packing devices, cables, retainers, stabilizers, hold openers, under reamers, whip stocks, mills, seals, plugs, drill bits, drill stems, drilling motors, drilling machines, drilling hammers, drilling impact tools, milling assemblies, percussion hammers, tongs, tubes, tubing, cutters, swivels, casing and tubing patches, injection equipment, swages, shakers, desanders, desilters, mud cleaning equipment, centrifuges, fluid processing equipment, straddles, spears, half-mule shoes, guide shoes, burn shoes, washover shoes, vacuums, retrieving tools, fishing tools, drilling rigs, bearings for use in drilling machines, rotors used in drilling machines, packers, stators being parts of drilling rigs machines, safety valves, rotating control devices, banding equipment, hangars, screening equipment, sensors, inflow control tools, slicklines, perforating devices, pumps, tubing, pipes, pipe joints, safety joints, accelerators, scrapers, exchangers, casings, cables, gas lifting devices, fluid separators, meters, power and control equipment, boosting equipment, vibration detectors, anchors, imaging equipment, wells, storage devices, tanks, hydraulic equipment, apparatus for the remote observation and operation of oil and gas drilling equipment, flow monitoring devices and thermometers all being devices for use with and part of drilling mechanization machines” in the identification of goods is indefinite and must be clarified because it is unclear whether this wording is listing particular devices that are sold separately and specially adapted for drilling rig mechanization machines, or component parts of drilling rig

mechanization machines. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant must clarify the items listed and their relationship to drilling rig mechanization machines using their common commercial names.

The wording “rubber and metal mechanical o-ring seals used in equipment for oil and gas exploration and production” in the identification of goods for International Class 7 must be clarified because it is too broad and could include goods in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. If these goods are "machine parts," applicant must so specify and keep these goods in International Class 7.

The wording “electric drills; pneumatic drills” in the identification of goods is indefinite and must be clarified because the type of drill provided is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may substitute the following wording, if accurate: “electric power drills; pneumatic hand-held drills.”

The wording “friction-stir welding tools; friction-stir welding machines” in the identification of goods is indefinite and must be clarified because the particular tools and machines are unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: “welding torches” and "electric welding machines."

The wording “machines, namely, cementing equipment used in oil and gas exploration and production” in the identification of goods for International Class 7 must be clarified because it is too broad and could include goods in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. In particular, this wording could encompass cement testing machines in Class 9.

Applicant may incorporate the following wording, if accurate, in Class 9: cement testing machines.

Class 9

The wording "Scientific, nautical, surveying, photographic, cinematographic, optical, weighing, measuring, signaling, checking (supervision), life-saving and teaching apparatus and instruments; apparatus and instruments for conducting, switching, transforming, accumulating, regulating or controlling electricity; apparatus for recording, transmission or reproduction of sound or images; magnetic data carriers, recording discs" is too broad and must be clarified because it consists of or includes international class heading(s) for Class 9 and could identify goods and/or services in more than the classes specified. *See* 37 C.F.R. §§2.85(e), (f), 2.32(a)(6); TMEP §§1401.02(a), 1401.08. The USPTO generally considers class headings, whose sole purpose is to indicate the subject matter and general scope of each international class of goods and/or services, to be too broadly worded to identify goods and/or services in a U.S. application. *See In re Societe Generale des Eaux Minerales de Vittel S.A.*, 1 USPQ2d 1296, 1298-99 (TTAB 1986), *rev'd on other grounds*, 824 F.2d 957, 3 USPQ2d 1450 (Fed. Cir. 1987); TMEP §§1401.02(a), 1401.08, 1402.01 *et seq.*, 1402.07(a).

For amendments to identifications consisting of class headings, the scope of the identification is limited to the ordinary meaning of the words in the heading. *See In re Fiat Grp. Mktg. & Corp. Commc'ns S.p.A.*, 109 USPQ2d 1593, 1598 (TTAB 2014); TMEP §§1402.06(a), (b), 1402.07(a). Accordingly, applicant must amend the identification to specify goods and/or services that fall within the ordinary meaning of the words in the class heading(s). *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.06(a), (b), 1402.07(a).

The wording "Automatic vending machines" classified incorrectly. Applicant must amend the application to classify the goods in International Class 7. *See* 37 C.F.R. §§2.32(a)(7), 2.85; TMEP §§1401.02(a), 1401.03(b).

The identification for software and firmware in International Class 9 is indefinite and too broad and must be clarified to specify (1) the purpose or function of the software and its content or field of use, if content- or field- specific; and (2) whether its format is downloadable, recorded, or online non-downloadable. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.03(d), 1402.11(a). Downloadable and recorded goods are in International Class 9, whereas providing their temporary, online non-downloadable use is a service in International Class 42. *See* TMEP §1402.03(d).

The USPTO requires such specificity in order for a trademark examining attorney to examine the application properly and make appropriate decisions concerning possible conflicts between the applicant's mark and other marks. *See In re N.A.D. Inc.*, 57 USPQ2d 1872, 1874 (TTAB 2000); TMEP §1402.03(d).

The wording "micro-processor computer controlled rig floor monitors which monitor and display various drilling functions with alarms" in the identification of goods is indefinite and must be clarified because the type of monitor and matter monitored is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: "gas flow monitors."

The wording "electronic drilling recorders, namely, micro-processor controlled drilling mud logging equipment for use in logging drilling fluid pressure, temperature, viscosity and composition" in the identification of goods is indefinite and must be clarified because the nature of this "equipment" is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: "sensors."

The wording "laser welding devices; welding electrodes" in the identification of goods for International Class 9 must be clarified because it is too broad and could include goods in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. In particular, this wording could encompass "laser welding machines; electrodes for welding machines" in Class 7.

Applicant may substitute the following wording, if accurate: "laser welding machines; electrodes for welding machines" in Class 7.

The wording "equipment for the production of hydrogen energy; equipment used in the lithium extraction process; equipment for the capture and storage of carbon, equipment for the use of geoenery or geothermal power;" in the identification of goods is indefinite and must be clarified because the nature of the equipment is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant must specify the common commercial names of these goods.

Class 13

The wording "such as" in "Explosive substances and projectiles, such as shaped charges, for use in perforating metal casing lining and oil well along with the adjoining earth formation" in the identification of goods is indefinite and must be clarified because it fails to identify specific goods. *See* TMEP §1402.03(a). Therefore, applicant must delete this indefinite wording from the identification and

specify the common commercial or generic name for these goods.

In an identification, an applicant must use the common commercial or generic name for the goods, be specific and all-inclusive, and avoid using indefinite words or phrases. TMEP §§1402.01, 1402.03(a). Further, applicant may amend the identification to list only those items that are within the scope of the goods set forth in the initial application or as acceptably amended. *See* 37 C.F.R. §2.71(a); TMEP §§1402.06 *et seq.*, 1402.07. Scope is generally determined by the ordinary meaning of the wording in the identification. TMEP §1402.07(a).

Applicant may substitute the following wording, if accurate: "Explosive substances and projectiles, namely, shaped charges, for use in perforating metal casing lining and oil well along with the adjoining earth formation. " Applicant should also delete the duplicative instance of the problematic wording.

Class 35

The wording "online supply and procurement for others, namely, purchasing of goods and services related to the fields of oil and gas exploration and production" in the identification of services is indefinite and must be clarified because the goods and services procured are unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant must specify the goods and services procured.

The wording "providing a database featuring oil and gas properties for possible leasing or acquisition; providing an online database consisting of regulatory information in the fields of oil and gas exploration and production for business purposes" in the identification of services for International Class 35 must be clarified because it is too broad and could include services in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. Services for providing an online database are classified by the subject matter of the database. For example, providing a database in the field of leasing of real property would be classified in International Class 36.

Applicant may substitute the following wording, if accurate: "Providing an on-line searchable database featuring real property for lease for oil and gas production" in Class 36 and "Providing an on-line searchable database for business purposes featuring information on regulations in the field of oil and gas exploration and production" in Class 45.

The wording "transportation logistics services, namely, planning and scheduling of drilling rigs and vessels used in oil and gas exploration and production" in the identification of services is indefinite and must be clarified because it is unclear whether the planning and scheduling is for transportation. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: planning and scheduling of vessel transport of drilling rigs.

Class 37

The wording "sand control services related to the fields of oil and gas well drilling; fishing and retrieval services in the fields of oil and gas well drilling" in the identification of services is indefinite and must be clarified because the purpose of these activities is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: Maintenance of oil well casings, tubing and drill pipes.

The wording “artificial lift services in the fields of oil and gas well drilling” in the identification of services is indefinite and must be clarified because the nature of these services is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: oil pumping.

The wording “provision of equipment used to separate oil from water” in the identification of services is indefinite and must be clarified because the nature of "provision" activities is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may substitute the following wording, if accurate: Installation, maintenance and repair of oil separators.

The wording “rental of tools and drilling equipment in connection with the fields of geothermal resources, water management, and carbon dioxide storage and containment; . . . rental of equipment used in connection with irrigation services and oil and gas exploration and production” in the identification of services is indefinite and must be clarified because the nature of the tools and equipment rented is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: rental of drilling platforms; rental of oil well drilling tools.

The wording "rental of tractors used in oil and gas exploration and production; . . . waste oil collection and recycling" classified incorrectly. Applicant must amend the application to classify the goods and/or services in International Class 39. *See* 37 C.F.R. §§2.32(a)(7), 2.85; TMEP §§1401.02(a), 1401.03(b).

The wording “irrigation devices, installation and repair” in the identification of services is indefinite and must be clarified because the wording is grammatically ambiguous. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may substitute the following wording, if accurate: installation and repair of irrigation devices.

The wording “rental of equipment used in connection with irrigation services and oil and gas exploration and production” in the identification of services for International Class 37 must be clarified because it is too broad and could include services in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. In particular, this wording could encompass "Oil well prospecting, namely, perforation," in Class 40. Applicant must clarify the purpose of the services and classify the services appropriately.

Class 42

The wording “testing, analysis, and evaluation of oil and gas reserves” in the identification of services is indefinite and must be clarified because the property tested is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: analysis of oil and gas quality.

The wording “oil and gas well drilling services, namely, providing measurements and downhole telemetry while drilling” in the identification of services for International Class 42 must be clarified because it is too broad and could include services in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. In particular, this wording could encompass oil well drilling in Class 37 and Providing measurements and downhole telemetry while drilling oil and gas wells in Class 42. Applicant must separate these activities into their respective appropriate classes.

The wording “conducting environmental studies in the fields of oil and gas exploration and production,

geothermal resources, water management, storage and containment or carbon dioxide” in the identification of services is indefinite and must be clarified because the type of study is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: conducting wellbore survey services.

The wording “oil and gas well logging, testing, analysis, inspection, and sampling” in the identification of services is indefinite and must be clarified because the matter analyzed, inspected, and sampled is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: Inspection services, namely, detection of leaks in {indicate specific item, e.g., hot tubs, spas}.

The wording “recovery services in the fields of oil and gas exploration and production; to retrieve instruments and tools lost in a well” in the identification of services for International Class 42 must be clarified because it is too broad and could include services in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. In particular, this wording could encompass "Well improvement services, namely, hydraulic fracturing of subsurface geologic formations to enhance well production" and "excavation" in Class 37.

Applicant may substitute the following wording, if accurate: "recovery services, namely, excavation to recover lost instruments and tools in well during oil and gas exploration and production; Well improvement services, namely, hydraulic fracturing of subsurface geologic formations to enhance well production" in Class 37.

The wording “engineering modeling and design of drilling processes and operation of facilities used in oil and gas exploration and production” in the identification of services is indefinite and must be clarified because the matter engineered, modeled, and designed is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may substitute the following wording, if accurate: Design of seismic acquisition parameters, namely, models or plans for acquiring seismic data in connection with drilling operations.

The wording “digital solutions in the fields of oil and gas exploration and production for the optimization of production, including cloud based solutions, software-as-a-service solutions, machine learning, artificial intelligence, and on-premise solutions” in the identification of services is indefinite and must be clarified because the nature of "solutions" is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may substitute the following wording, if accurate: Software as a service (SAAS) services featuring software for {specify the function of the programs, e.g., for use in database management, for use as a spreadsheet, for word processing, etc. and, if software is content - or field-specific, the field of use}.

The wording “interpretation and analysis for the petroleum industry in methods and products for interpreting oil and gas well data obtained during the provision of testing services” in the identification of services is indefinite and must be clarified because this wording is grammatically ambiguous and the subject matter of the services is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant must specify the common commercial name of the services and clearly state their subject matter.

The wording “providing early production and extended well test facilities and plants for others to allow production of oil and gas while full field development is being planned and permanent facilities are being built” in the identification of services for International Class 42 must be clarified because it is too broad and could include services in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP

§§1402.01, 1402.03. In particular, this wording could encompass facilities for oil production in Class 40.

Applicant may incorporate the following wording, if accurate: Rental of oil well testing facilities, in Class 42.

The wording “subterranean well testing services for use in connection with subterranean oil well drilling operations” in the identification of services is indefinite and must be clarified because the type of well tested is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: oil well testing.

The wording “providing technical advice on drilling fluids and drilling fluid use and technical advice on data control, products control, and pressure control” in the identification of services for International Class 42 must be clarified because it is too broad and could include services in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. In particular, this wording could encompass advice in the field of oil and gas drilling in Class 37. Applicant must clarify the subject matter of its advice services and classify these services appropriately.

The wording “providing oil well pressure control testing services for others in the oil and gas industries” in the identification of services is indefinite and must be clarified because it is unclear whether these services are a type of oil well testing. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: oil well testing.

The wording “engineering, consulting, and testing services in connection with exploring and developing geothermal resources, water management, and carbon dioxide storage and containment” in the identification of services is indefinite and must be clarified because the field of the consulting services and the matter tested are unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. If these services are in the field of "research and development in the field of geothermal energy," applicant must so specify.

The wording “software rental services in connection with the fields of geothermal resources, water management and carbon dioxide storage and containment” in the identification of services is indefinite and must be clarified because the function of the software is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may substitute the following wording, if accurate: Rental of computer software for {indicate function of software, e.g., playing games, editing digital photos, etc.}.

The wording “carbon capture and storage services; lithium extraction services; geothermal power production and distribution services; and hydrogen production, storage and distribution services” in the identification of services for International Class 42 must be clarified because it is too broad and could include services in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. In particular, this wording could encompass Physical storage of captured carbon dioxide (CO₂) for others in Class 39, mining extraction in Class 37, generating electricity in Class 40, and gas production in Class 40. Applicant must clarify the nature of the services and classify the services appropriately.

Suggested Identification of Goods and Services

To address the indefinite and overly broad wording discussed above, applicant may adopt any or all of the following identification of goods and services. Suggested changes are shown in bold, strike-

through, and underlined font.

International Class 001: **Boric acids** used in oil and gas exploration and production; hydraulic fluid; chemical preparations, namely, **cleaning degreasing** solvents used in oil and gas exploration and production; chemicals used in oil drilling; drilling muds for use in oil and gas well drilling; chemicals for welding; gases for welding; metal welding flux; chemical drilling fluids for use in subterranean wells, namely, drilling muds, completion fluids, workover fluids and wellbore fluids; chemical additives for use with drilling fluids; chemical drilling fluids for use in oil well drilling; hydrogen as energy carrier; and lithium as part of a renewal energy system

International Class 007: Oil, gas, geothermal, water development, and carbon dioxide field equipment, namely, drilling rig mechanization machines and devices ~~consisting of locks, nipples, expandables, cones, flow control devices, isolation valves, liner hangers, couplings, bushings, flotation equipment, centralizer equipment, manifolds, collars, monitoring devices, multilateral devices, packing devices, cables, retainers, stabilizers, hold openers, under reamers, whip stocks, mills, seals, plugs, drill bits, drill stems, drilling motors, drilling machines, drilling hammers, drilling impact tools, milling assemblies, percussion hammers, tongs, tubes, tubing, cutters, swivels, casing and tubing patches, injection equipment, swages, shakers, desanders, desilters, mud cleaning equipment, centrifuges, fluid processing equipment, straddles, spears, half mule shoes, guide shoes, burn shoes, washover shoes, vacuums, retrieving tools, fishing tools, drilling rigs, bearings for use in drilling machines, rotors used in drilling machines, packers, stators being parts of drilling rigs machines, safety valves, rotating control devices, banding equipment, hangars, screening equipment, sensors, inflow control tools, slicklines, perforating devices, pumps, tubing, pipes, pipe joints, safety joints, accelerators, scrapers, exchangers, casings, cables, gas lifting devices, fluid separators, meters, power and control equipment, boosting equipment, vibration detectors, anchors, imaging equipment, wells, storage devices, tanks, hydraulic equipment, apparatus for the remote observation and operation of oil and gas drilling equipment, flow monitoring devices and thermometers all being devices for use with and part of drilling mechanization machines~~; structural and replacement parts for drilling rig mechanization machines, namely, {specify common commercial names of parts, e.g., coupling for machines}; {specify common commercial names of goods, e.g., anchors} specially adapted for use with drilling rig mechanization machines; pumps for use in irrigation systems; parts of oilfield wellhead machines, namely, chokes, degassers, and centrifuges. power operated pressure control equipment consisting of parts of oilfield wellhead machines, namely, chokes, degassers, centrifugal degassers, hydrogen sulfide mud gas separators, dual mud gas separators for horizontal drilling; **Machine parts, namely,** rubber and metal mechanical o-ring seals used in equipment for oil and gas exploration and production; cutting machines and machine tools, namely, powered machines for cutting or shaping or finishing metals or other materials; precision machine tools, namely, hard metal tools, high speed steel (HSS) tools, carbide tools, ceramic tools, poly crystalline diamond (PCD) tools, and diamond-coated and diamond-uncoated tools, and hard metal tools, all for use in the cutting and forming of material by others; mechanical seals; air-operated power tools, namely, drills, grinders, and millers; drills for the mining industry; electric **power** drills; pneumatic **hand-held** drills; power drills; power tools, namely, reamers; electric welding machines; laser welding machines; friction-stir welding tools, **namely, welding torches; electric welding machines, namely** friction-stir welding machines; bits for mining machines; bits for power drills; core

drilling bits; mining bits; tool bits for machines; bearings, as parts of machines; roller bearings for machines; pump diaphragms; ~~machines, namely, cementing equipment used in oil and gas exploration and production~~ automatic vending machines; laser welding machines; electrodes for welding machines

International Class 009: ~~Scientific, nautical, surveying, photographic, cinematographic, optical, weighing, measuring, signaling, checking (supervision), life-saving and teaching apparatus and instruments; apparatus and instruments for conducting, switching, transforming, accumulating, regulating or controlling electricity; apparatus for recording, transmission or reproduction of sound or images; magnetic data carriers, recording discs {specify common commercial names of goods within scope of wording, e.g., cameras}; automatic vending machines and mechanisms for coin-operated apparatus; cash registers, calculating machines, data processing equipment and computers; fire extinguishing apparatus; recorded computer software and manuals distributed therewith to process for processing data used for oil and gas exploration and production in locating, evaluating and producing hydrocarbons, and printed instruction manuals sold as a unit; downloadable computer~~ firmware for digital enablement of oilfield tools; automated self-contained electronic surveillance devices that can be deployed to gather information in oil and gas exploration and production facilities; testing and measuring equipment used in oil and gas exploration and production facilities to test performance and efficiency of oil and gas well equipment; petroleum industry equipment, namely, electronic rig instrumentation for monitoring well pressure and volume of returned drilling fluid; micro-processor computer controlled rig floor gas flow monitors which monitor and display various gas flow during drilling functions with alarms; electronic pit volume totalizers and return flow sensors for use in blow-out prevention or monitoring of drilling fluid pressure, temperature, viscosity, and composition; electronic drilling recorders, namely, micro-processor controlled drilling mud logging equipment for use in sensing and logging drilling fluid pressure, temperature, viscosity and composition; electric cables, fiber optic cables; cement testing machines; laser welding devices; welding electrodes; welding transformers; magnets for industrial purposes; magnets used in oil and gas exploration and production; equipment for the production of hydrogen energy; equipment used in the lithium extraction process; equipment for the capture and storage of carbon, equipment for the use of geenergy or geothermal power {list common commercial names of goods in Class 9}; {specify downloadable or recorded} computer software for {specify function of software}; cement testing machines used in the oil and gas industry.

International Class 012: Tractors used in oil and gas exploration and production; trucks equipped with apparatus to conduct services well testing, evaluating, drilling, completing, producing and repairing rendered in connection with oil and gas wells, and for acquiring, processing, interpreting, storing, presenting and transmitting from one location to another of well site logging data; boats and barges equipped with pumping equipment for fracturing, acidizing, cementing, and sand control in connection with oil and gas wells; land vehicles for cable inspection and on-site oil and gas well measurements

International Class 013: Explosive substances and projectiles, ~~such as namely,~~ shaped charges, for use in perforating metal casing lining and oil well along with the adjoining earth formation: ~~Explosive substances and projectiles, such as shaped charges, for use in perforating metal casing lining and oil well along with the adjoining earth formation~~

International Class 035: Managing the exploration, production and operations of gas and oil

properties for others; advertising and marketing services, namely, promoting the goods and services of others in the fields of oil and gas exploration and production; online supply and procurement for others, namely, purchasing of ~~goods and services~~ {specify goods or services, e.g., weapons, office furniture} related to the fields of oil and gas exploration and production; ~~providing a database featuring oil and gas properties for possible leasing or acquisition;~~ ~~providing an online database consisting of regulatory information in the fields of oil and gas exploration and production for business purposes;~~ transportation logistics services, namely, planning and scheduling of ~~drilling rigs and vessels~~ vessel transport of drilling rigs used in oil and gas exploration and production; data processing services in the fields of oil and gas exploration and production; business consulting services for the energy industry related to establishing and improving business functions, namely, corporate and project strategies, organization management, operations management, operations improvement, technology management, mergers and acquisitions, and company integration

International Class 036: Providing an on-line searchable database featuring real property for lease for oil and gas production.

International Class 037: Construction project management services for others in the fields of oil and gas exploration and production; oil and gas drilling; consulting services in the fields of oil and gas well drilling; Maintenance of oil well casings, tubing, and drill pipes, namely, sand control services related to the fields of oil and gas well drilling; Maintenance of oil well casings, tubing, and drill pipes, namely, fishing and retrieval services in the fields of oil and gas well drilling; Oil pumping, namely, artificial lift services in the fields of oil and gas well drilling; ~~provision of equipment used to separate oil from water~~ Installation, maintenance and repair of oil separators; rental of ~~tools and drilling equipment~~ drilling platforms and oil well drilling tools in connection with the fields of geothermal resources, water management, and carbon dioxide storage and containment; repair and maintenance of oil and gas drilling equipment and facilities; subterranean well drilling services; ~~rental of tractors used in oil and gas exploration and production;~~ cementing services for oil and gas wells; ~~waste oil collection for recycling;~~ drilling of wells; rental of drilling platforms; installation and maintenance of irrigation systems; installation and repair of irrigation devices, ~~installation and repair;~~ ~~perforating services in connection with the oil and gas industries;~~ rental of equipment oil well drilling tools used in connection with irrigation services and oil and gas exploration and production; oil and gas well drilling services; recovery services, namely, excavation to recover lost instruments and tools in well during oil and gas exploration and production; Well improvement services, namely, hydraulic fracturing of subsurface geologic formations to enhance well production; providing technical advice in the field of oil and gas drilling, namely technical advice on drilling fluids and drilling fluid use and technical advice on data control, products control, and pressure control; mining extraction of lithium.

International Class 039: rental of tractors used in oil and gas exploration and production; waste oil collection for recycling; physical storage of captured carbon dioxide for others.

International Class 040: Oil well prospecting, namely, perforation services; Generating electricity from geothermal energy; gas production services, namely, hydrogen production.

International Class 041: Educational services, namely, conducting classes, seminars, conferences, and workshops in the fields of oil and gas exploration, measurement, detection, and production, geothermal resources, water management, storage and containment of carbon dioxide, and

environmental issues and distribution of course material in connection therewith

International Class 042: Providing information, news and commentary in the fields of oil and gas exploration; technical support services, namely, troubleshooting of computer software problems used in the fields of oil and gas exploration and production; updating of computer software for others; providing technical information updates of computer software used in the fields of oil and gas exploration and production; computer software consultation; consultation services in the fields of selection, testing, implementation and use of computer hardware and software systems for others; providing online information in the fields of computer software used in the fields of oil and gas exploration and production; testing, analysis, and evaluation of oil and gas reserves; ~~oil and gas well drilling services, namely,~~ providing measurements and downhole telemetry while drilling; engineering services in the field of environmental compliance; conducting environmental wellbore survey services studies in the fields of for the oil and gas exploration and production, geothermal resources, water management, storage and containment ~~or~~ carbon dioxide industries; oil and gas well logging, and testing; ~~analysis, inspection, and sampling~~ Oil and gas well inspection services, namely, detection of leaks in oil and gas well casings; performing oil and gas well diagnostics; oil and gas well surveying; surveying of oil-bearing seams; non-medical ultrasound imaging services in connection with oil and gas exploration; conducting magnetic resonance imaging interpretation and analysis for the oil and gas industries; ~~recovery services in the fields of oil and gas exploration and production; to retrieve instruments and tools lost in a well; remedial services in the field of oil and gas production to restore a well to higher production levels;~~ computer modeling services, namely, computer simulation of drilling processes and operation of facilities used in oil and gas exploration and production; ~~engineering modeling and design of drilling processes and operation of facilities used in oil and gas exploration and production~~ Design of seismic acquisition parameters, namely, models or plans for acquiring seismic data in connection with drilling operations; ~~digital solutions in the fields of oil and gas exploration and production for the optimization of production, including cloud-based solutions, software-as-a-service solutions, machine learning, artificial intelligence, and on-premise solutions~~ Software as a service (SAAS) services featuring software for {specify the function of the programs, e.g., for use in database management, for use as a spreadsheet, for word processing, etc. and, if software is content - or field-specific, the field of use}; design of seismic acquisition parameters, namely, models or plans for acquiring seismic data used in connection with oil and gas drilling operations; ~~interpretation and analysis for the petroleum industry in methods and products for interpreting oil and gas well data obtained during the provision of testing services {specify common commercial name of services}~~; ~~providing early production and extended well test facilities and plants~~ Rental of oil well testing facilities for others to allow production of oil and gas while full field development is being planned and permanent facilities are being built; subterranean oil well testing services for use in connection with subterranean oil well drilling operations; engineering services in connection with the selection and use of specialized equipment for subterranean well drilling operations ~~and providing technical advice on drilling fluids and drilling fluid use and technical advice on data control, products control, and pressure control~~; Oil well testing, namely, providing oil well pressure control testing services for others in the oil and gas industries; oil and gas exploration; ~~engineering, consulting, and testing services in connection with engineering and consulting in the field of research and development in the field of geothermal energy, namely,~~ exploring and developing geothermal resources, water management, and carbon dioxide storage and containment; ~~software rental services in connection with~~ Rental of computer software for {indicate function of software, e.g., playing games, editing digital photos,

~~etc.} in the fields of geothermal resources, water management and carbon dioxide storage and containment; carbon capture and storage services; lithium extraction services; geothermal power production and distribution services; and hydrogen production, storage and distribution services~~

International Class 045: Providing an on-line searchable database for business purposes featuring information on regulations in the field of oil and gas exploration and production

Applicant may amend the identification to clarify or limit the goods and/or services, but not to broaden or expand the goods and/or services beyond those in the original application or as acceptably amended. See 37 C.F.R. §2.71(a); TMEP §1402.06. Generally, any deleted goods and/or services may not later be reinserted. See TMEP §1402.07(e).

For assistance with identifying and classifying goods and services in trademark applications, please see the USPTO's online searchable [U.S. Acceptable Identification of Goods and Services Manual](#). See TMEP §1402.04.

Advisory: Multiple Class Application Requirements

The application identifies goods and/or services in more than one international class; therefore, applicant must satisfy all the requirements below for each international class based on Trademark Act Section 1(b):

- (1) **List the goods and/or services by their international class number** in consecutive numerical order, starting with the lowest numbered class.
- (2) **Submit a filing fee for each international class** not covered by the fee(s) already paid (view the [USPTO's current fee schedule](#)). The application identifies goods and/or services that are classified in at least 13 classes; however, applicant submitted a fee(s) sufficient for only 9 class(es). Applicant must either submit the filing fees for the classes not covered by the submitted fees or restrict the application to the number of classes covered by the fees already paid.

See 37 C.F.R. §2.86(a); TMEP §§1403.01, 1403.02(c).

For an overview of the requirements for a Section 1(b) multiple-class application and how to satisfy the requirements online using the Trademark Electronic Application System (TEAS) form, see the [Multiple-class Application webpage](#).

ENTITY CLARIFICATION REQUIRED

Applicant sets forth in the application the legal entity "company" and applicant's address and/or country of organization as Curaçao. The designation "company" (or the abbreviation "co.") or "limited company" is typically an acceptable entity designation in a U.S. application for applicants from Commonwealth countries. See TMEP §803.03(i). However, the applicant has identified an address and/or country of organization that is not a Commonwealth country.

Therefore, applicant must clarify the legal entity in the application. *See* 37 C.F.R. §§2.32(a)(3), 2.61(b); TMEP §803.03(i). Applicant may do so by (1) specifying the entity type that would be the equivalent of a “company” in the United States or (2) providing a description of the nature of the foreign entity that is applying. *See* TMEP §803.03(i).

RESPONDING TO THIS OFFICE ACTION

Response guidelines. For this application to proceed, applicant must explicitly address each refusal and/or requirement in this Office action. For a refusal, applicant may provide written arguments and evidence against the refusal, and may have other response options if specified above. For a requirement, applicant should set forth the changes or statements. Please see “[Responding to Office Actions](#)” and the informational [video “Response to Office Action”](#) for more information and tips on responding.

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RESPONSE GUIDANCE

- **Missing the response deadline to this letter will cause the application to [abandon](#).** The response must be received by the USPTO before midnight **Eastern Time** of the last day of the response period. TEAS maintenance or [unforeseen circumstances](#) could affect an applicant’s ability to timely respond.
- **[Responses signed by an unauthorized party](#)** are not accepted and can **cause the application to [abandon](#)**. If applicant does not have an attorney, the response must be signed by the individual applicant, all joint applicants, or someone with [legal authority to bind a juristic applicant](#). If applicant has an attorney, the response must be signed by the attorney.
- If needed, **find [contact information for the supervisor](#)** of the office or unit listed in the signature block.

(5) WORDS, LETTERS, AND/OR NUMBERS IN STYLIZED FORM

SLB

Mark Punctuated

SLB

Translation

Goods/Services

- IC 007. US 013 019 021 023 031 034 035.G & S: Anti-friction bearings for machines; Bearing brackets for machines; Bearings for transmission shafts, being parts of machines; Bearings, as parts of machines; Engine bearings; Lubrication machines; Machine parts, namely, roll mill bearings; Piston rings; Roller bearings for machines; Shaft bearings for vacuum pumps. FIRST USE: 19951001. FIRST USE IN COMMERCE: 19961220

Mark Drawing Code

(5) WORDS, LETTERS, AND/OR NUMBERS IN STYLIZED FORM

Design Code

Serial Number

87932286

Filing Date

20180522

Current Filing Basis

1A

Original Filing Basis

1A

Publication for Opposition Date

20181016

Registration Number

5643436

Date Registered

20190101

Owner

(REGISTRANT) Triple J LLC LIMITED LIABILITY COMPANY CALIFORNIA 1950 Elkhorn Ct., Unit 120 San Mateo, CALIFORNIA 94403

Priority Date

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Bearing (mechanical)

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A **bearing** is a machine element that constrains relative motion to only the desired motion, and reduces friction between moving parts. The design of the bearing may, for example, provide for free linear movement of the moving part or for free rotation around a fixed axis; or, it may prevent a motion by controlling the vectors of normal forces that bear on the moving parts. Most bearings facilitate the desired motion by minimizing friction. Bearings are classified broadly according to the type of operation, the motions allowed, or to the directions of the loads (forces) applied to the parts.

Rotary bearings hold rotating components such as shafts or axles within mechanical systems, and transfer axial and radial loads from the source of the load to the structure supporting it. The simplest form of bearing, the *plain bearing*, consists of a shaft rotating in a hole. Lubrication is used to reduce friction. In the *ball bearing* and *roller bearing*, to reduce sliding friction, rolling elements such as rollers or balls with a circular cross-section are located between the races or journals of the bearing assembly. A wide variety of bearing designs exists to allow the demands of the application to be correctly met for maximum efficiency, reliability, durability and performance.

The term "bearing" is derived from the verb "to bear",^[1] a bearing being a machine element that allows one part to bear (i.e., to support) another. The simplest bearings are bearing surfaces, cut or formed into a part, with varying degrees of control over the form, size, roughness, and location of the surface. Other bearings are separate devices installed into a machine or machine part. The most sophisticated bearings for the most demanding applications are very precise components; their manufacture requires some of the highest standards of current technology.



Ball bearing

Contents [hide]

- 1 History
 - 1.1 Industrial era
- 2 Common
- 3 Types
- 4 Motions
- 5 Friction
- 6 Loads
- 7 Speeds
- 8 Play
- 9 Stiffness
- 10 Service life
 - 10.1 L10 life
 - 10.2 External factors
- 11 Mounting
- 12 Maintenance and lubrication
 - 12.1 Packing
 - 12.2 Ring oiler
 - 12.3 Splash lubrication
 - 12.4 Pressure lubrication
 - 12.5 Composite bearings
- 13 Rolling-element bearing outer race fault detection
- 14 See also
- 15 References
- 16 External links

History

The invention of the rolling bearing, in the form of wooden rollers supporting, or bearing, an object being moved is of great antiquity. It may predate the invention of a wheel rotating on a plain bearing.^[*citation needed*]

Though it is often claimed that the Egyptians used roller bearings in the form of tree trunks under sleds,^[*citation needed*] this is modern speculation.^{[*2*][*3*page needed]} The Egyptians' own drawings in the tomb of Djehutihotep show the process of moving massive stone blocks on sledges as using liquid-lubricated runners which would constitute plain bearings.^{[*3*][*3*page needed]} There are also Egyptian drawings of plain bearings used with hand drills.^[4]

Wheeled vehicles using plain bearings emerged between about 5000 BC and 3000 BC.^[*citation needed*]



The earliest recovered example of a rolling element bearing is a wooden ball bearing supporting a rotating table from the remains of the Roman Nemi ships in Lake Nemi, Italy. The wrecks were dated to 40 BC.^{[9][6]}

Leonardo da Vinci incorporated drawings of ball bearings in his design for a helicopter around the year 1500; this is the first recorded use of bearings in an aerospace design. However, Agostino Ramelli is the first to have published sketches of roller and thrust bearings.^[citation needed] An issue with ball and roller bearings is that the balls or rollers rub against each other, causing additional friction. This can be reduced by enclosing each individual ball or roller within a cage. The captured, or caged, ball bearing was originally described by Galileo in the 17th century.^[citation needed]

The first practical caged-roller bearing was invented in the mid-1740s by horologist John Harrison for his H3 marine timekeeper. In this timepiece the caged bearing was only used for a very limited oscillating motion, but later on Harrison applied a similar bearing design with a true rotational movement in a contemporaneous regulator clock.^[citation needed]

Industrial era [edit]

The first patent on ball bearings was awarded to Philip Vaughan, a British inventor and ironmaster in Carmarthen in 1794. His was the first modern ball-bearing design, with the ball running along a groove in the axle assembly.^[7]

Bearings played a pivotal role in the nascent Industrial Revolution, allowing the new industrial machinery to operate efficiently. For example, they were used for holding wheel and axle assemblies to greatly reduce friction compared to prior non-bearing designs.

The first plain and rolling-element bearings were wood, closely followed by bronze. Over their history bearings have been made of many materials, including ceramic, sapphire, glass, steel, bronze, and other metals. More recently, plastic bearings made of nylon, polyoxymethylene, polytetrafluoroethylene, and UHMWPE, among other materials, are also in use today.

Watch makers produce "jeweled" watches using sapphire plain bearings to reduce friction, thus allowing more precise time keeping.

Even basic materials can have impressive durability. Wooden bearings, for instance, can still be seen today in old clocks or in water mills where the water provides cooling and lubrication.

The first patent for a radial style ball bearing was awarded to Jules Surrau, a Pansian bicycle mechanic, on 3 August 1869. The bearings were then fitted to the winning bicycle ridden by James Moore in the world's first bicycle road race, Paris-Rouen, in November 1869.^[8]

In 1883, Friedrich Fischer, founder of FAG, developed an approach for milling and grinding balls of equal size and exact roundness by means of a suitable production machine, which set the stage for creation of an independent bearing industry. His hometown Schweinfurt later became a world leading center for ball bearing production.

The modern, self-aligning design of ball bearing is attributed to Sven Wingquist of the SKF ball-bearing manufacturer in 1907, when he was awarded Swedish patent No. 25406 on its design.

Henry Timken, a 19th-century visionary and innovator in carriage manufacturing, patented the tapered roller bearing in 1898. The following year he formed a company to produce his innovation. Over a century the company grew to make bearings of all types, including specialty steel bearings and an array of related products and services.

Erich Franke invented and patented the wire race bearing in 1934. His focus was on a bearing design with a cross section as small as possible and which could be integrated into the enclosing design. After World War II he founded together with Gerhard Heydrich the company Franke & Heydrich KG (today Franke GmbH) to push the development and production of wire race bearings.

Richard Stinbeck's extensive research^{[9][10]} on ball bearing steels identified the metallurgy of the commonly used 100Cr6 (AISI 52100),^[11] showing coefficient of friction as a function of pressure.

Designed in 1968 and later patented in 1972, Bishop-Wisecarver's co-founder Bud Wisecarver created vee groove bearing guide wheels, a type of linear motion bearing consisting of both an external and internal 90-degree vee angle.^{[12][better source needed]}

In the early 1980s, Pacific Bearing's founder, Robert Schroeder, invented the first bi-material plain bearing that was interchangeable with linear ball bearings. This bearing had a metal shell (aluminum, steel or stainless steel) and a layer of Teflon-based material connected by a thin adhesive layer.^[13]

Today's ball and roller bearings are used in many applications which include a rotating component. Examples include ultra high speed bearings in dental drills, aerospace bearings in the Mars Rover, gearbox and wheel bearings on automobiles, flexure bearings in optical alignment systems, and air bearings used in Coordinate-measuring machines.

Common [edit]

By far, the most common bearing is the plain bearing, a bearing which uses surfaces in rubbing contact, often with a lubricant such as oil or graphite. A plain bearing may or may not be a discrete device. It may be nothing more than the bearing surface of a hole with a shaft passing through it, or of a planar surface that bears another (in these cases, not a discrete device), or it may be a layer of bearing metal either fused to the substrate (semi-discrete) or in the form of a separable sleeve (discrete). With suitable lubrication, plain bearings often give entirely acceptable accuracy, life, and friction at minimal cost. Therefore, they are very widely used.

However, there are many applications where a more suitable bearing can improve efficiency, accuracy, service intervals, reliability, speed of operation, size, weight, and costs of purchasing and operating machinery.

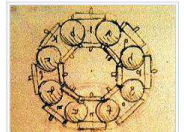
Thus, there are many types of bearings, with varying shape, material, lubrication, principle of operation, and so on.

Types [edit]

There are at least 6 common types of bearing,^[14] each of which operates on a different principle:

- Plain bearing, consisting of a shaft rotating in a hole. There are several specific styles: bushing, journal bearing, sleeve bearing, rifle bearing, composite bearing;
- Rolling-element bearings, whose performance does not depend on avoiding or reducing friction between two surfaces but employ a different principle to achieve low external friction: the rolling motion of an intermediate element in between the surfaces which bears the axial or radial load. Classified as either:
 - Ball bearing, in which the rolling elements are spherical balls;
 - Roller bearing, in which the rolling elements are cylindrical rollers, linearly-tapered (conical) rollers, or rollers with a curved taper (so-called spherical rollers);

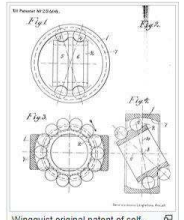
Tapered roller bearing [edit]



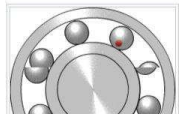
Drawing of Leonardo da Vinci (1452–1519) *Study of a ball bearing* [edit]



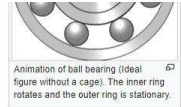
Early Timken tapered roller bearing with notched rollers [edit]



Wingquist original patent of self-aligning ball bearing [edit]



- Jewel bearing, a plain bearing in which one of the bearing surfaces is made of an ultrahard glassy jewel material such as sapphire to reduce friction and wear;
- Fluid bearing, a noncontact bearing in which the load is supported by a gas or liquid (i.e. air bearing);
- Magnetic bearing, in which the load is supported by a magnetic field;
- Flexure bearing, in which the motion is supported by a load element which bends.



Notable characteristics of each of these types of bearing are summarized in the following table.

Type	Description	Friction	Stiffness [†]	Speed	Life	Notes
Plain bearing	Rubbing surfaces, usually with lubricant; some bearings use pumped lubrication and behave similarly to fluid bearings.	Depends on materials and construction. PTFE has a coefficient of friction ~0.05–0.35, depending upon fillers added.	Good, provided wear is low, but some slack is normally present	Low to very high	Low to very high – depends upon application and lubrication	Widely used, relatively high friction, suffers from stiction in some applications. Depending upon the application, the lifetime can be higher or lower than rolling element bearings.
Rolling element bearing	Ball or rollers contact both rotating and stationary surfaces which rotate rather than rub	Rolling coefficient of friction with steel can be ~0.005 (adding resistance due to seals, packed grease, preload and misalignment can increase friction to as much as 0.125)	Good, but some slack is usually present	Moderate to high (often requires cooling)	Moderate to high (depends on lubrication, often requires maintenance)	Used for higher moment loads than plain bearings with lower friction
Jewel bearing	Off-center bearing roils in seating	Low	Low due to flexing	Low	Adequate (requires maintenance)	Mainly used in low-load, high precision work such as clocks. Jewel bearings may be very small.
Fluid bearing	Fluid is forced between two faces and held in by edge seal	Zero friction at zero speed, low	Very high	Very high (usually limited to a few hundred feet per second at by seal)	Virtually infinite in some applications, may wear at startup/shutdown in some cases. Often negligible maintenance.	Can fail quickly due to grit or dust or other contaminants. Maintenance free in continuous use. Can handle very large loads with low friction.
Magnetic bearing	Faces of bearing are kept separate by magnets (electromagnets or eddy currents)	Zero friction at zero speed, but constant power for levitation, eddy currents are often induced when movement occurs, but may be negligible if magnetic field is quasi-static	Low	No practical limit	Indefinite. Maintenance free. (with electromagnets)	Active magnetic bearings (AMB) need considerable power. Electrodynamic bearings (EDB) do not require external power.
Flexure bearing	Material flexes to give and constrain movement	Very low	Low	Very high.	Very high or low depending on materials and strain in application. Usually maintenance free.	Limited range of movement, no backlash, extremely smooth motion
Composite bearing	Plain bearing shape with PTFE liner on the interface between bearing and shaft with a laminated metal backing. PTFE acts as a lubricant.	PTFE and use of fillers to dial in friction as necessary for friction control.	Good depending on laminated metal backing	Low to very high	Very high; PTFE and fillers ensure wear and corrosion resistance	Widely used, controls friction, reduces stick slip, PTFE reduces static friction

[†]Stiffness is the amount that the gap varies when the load on the bearing changes, it is distinct from the friction of the bearing.

Motions [edit]

Common motions permitted by bearings are:

- Radial rotation e.g. shaft rotation;
- linear motion e.g. drawer;
- spherical rotation e.g. ball and socket joint;
- hinge motion e.g. door, elbow, knee.

Friction [edit]

Reducing friction in bearings is often important for efficiency, to reduce wear and to facilitate extended use at high speeds and to avoid overheating and premature failure of the bearing. Essentially, a bearing can reduce friction by virtue of its shape, by its material, or by introducing and containing a fluid between surfaces or by separating the surfaces with an electromagnetic field.

- **By shape**, gains advantage usually by using spheres or rollers, or by forming flexure bearings.
- **By material**, exploits the nature of the bearing material used. (An example would be using plastics that have low surface friction.)
- **By fluid**, exploits the low viscosity of a layer of fluid, such as a lubricant or as a pressurized medium to keep the two solid parts from touching, or by reducing the normal force between them.

- **By fields**, exploits electromagnetic fields, such as magnetic fields, to keep solid parts from touching.
- **Air pressure** exploits air pressure to keep solid parts from touching.

Combinations of these can even be employed within the same bearing. An example of this is where the cage is made of plastic, and it separates the rollers/balls, which reduce friction by their shape and finish.

Loads [edit]

Bearing design varies depending on the size and directions of the forces that they are required to support. Forces can be predominately radial, axial (thrust bearings), or bending moments perpendicular to the main axis.

Speeds [edit]

Different bearing types have different operating speed limits. Speed is typically specified as maximum relative surface speeds, often specified ft/s or m/s. Rotational bearings typically describe performance in terms of the product *DN* where *D* is the mean diameter (often in mm) of the bearing and *N* is the rotation rate in revolutions per minute.

Generally, there is considerable speed range overlap between bearing types. Plain bearings typically handle only lower speeds, rolling element bearings are faster, followed by fluid bearings and finally magnetic bearings which are limited ultimately by centripetal force overcoming material strength.

Play [edit]

Some applications apply bearing loads from varying directions and accept only limited play or "slop" as the applied load changes. One source of motion is gaps or "play" in the bearing. For example, a 10 mm shaft in a 12 mm hole has 2 mm play.

Allowable play varies greatly depending on the use. As an example, a wheelbarrow wheel supports radial and axial loads. Axial loads may be hundreds of newtons force left or right, and it is typically acceptable for the wheel to wobble by as much as 10 mm under the varying load. In contrast, a lathe may position a cutting tool to ±0.002 mm using a ball lead screw held by rotating bearings. The bearings support axial loads of thousands of newtons in either direction and must hold the ball lead screw to ±0.002 mm across that range of loads

Stiffness [edit]

A second source of motion is elasticity in the bearing itself. For example, the balls in a ball bearing are like stiff rubber, and under load deform from round to a slightly flattened shape. The race is also elastic and develops a slight dent where the ball presses on it.

The stiffness of a bearing is how the distance between the parts which are separated by the bearing varies with applied load. With rolling element bearings this is due to the strain of the ball and race. With fluid bearings it is due to how the pressure of the fluid varies with the gap (when correctly loaded, fluid bearings are typically stiffer than rolling element bearings).

Service life [edit]

Fluid and magnetic bearings

Main articles: Fluid bearing and Magnetic bearing

Fluid and magnetic bearings can have practically indefinite service lives. In practice, there are fluid bearings supporting high loads in hydroelectric plants that have been in nearly continuous service since about 1900 and which show no signs of wear.^[*citation needed*]

Rolling element bearings

Rolling element bearing life is determined by load, temperature, maintenance, lubrication, material defects, contamination, handling, installation and other factors. These factors can all have a significant effect on bearing life. For example, the service life of bearings in one application was extended dramatically by changing how the bearings were stored before installation and use, as vibrations during storage caused lubricant failure even when the only load on the bearing was its own weight.^[15] the resulting damage is often false brinelling.^[16] Bearing life is statistical: several samples of a given bearing will often exhibit a bell curve of service life, with a few samples showing significantly better or worse life. Bearing life varies because microscopic structure and contamination vary greatly even where macroscopically they seem identical.

L10 life [edit]

Bearings are often specified to give an "L10" life (outside the US, it may be referred to as "B10" life.) This is the life at which ten percent of the bearings in that application can be expected to have failed due to classical fatigue failure (and not any other mode of failure like lubrication starvation, wrong mounting etc.), or, alternatively, the life at which ninety percent will still be operating. The L10 life of the bearing is theoretical life and may not represent service life of the bearing. Bearings are also rated using C₀ (static loading) value. This is the basic load rating as a reference, and not an actual load value.

Plain bearings

For plain bearings, some materials give much longer life than others. Some of the John Harrison clocks still operate after hundreds of years because of the *lignum vitae* wood employed in their construction, whereas his metal clocks are seldom run due to potential wear.

Flexure bearings

Flexure bearings rely on elastic properties of a material. Flexure bearings bend a piece of material repeatedly. Some materials fail after repeated bending, even at low loads, but careful material selection and bearing design can make flexure bearing life indefinite.

Short-life bearings

Although long bearing life is often desirable, it is sometimes not necessary. Harris 2001 describes a bearing for a rocket motor oxygen pump that gave several hours life, far in excess of the several tens of minutes life needed.^[15]

Composite bearings

Depending on the customized specifications (backing material and PTFE compounds), composite bearings can operate up to 30 years without maintenance.

Oscillating bearings

For bearings which are used in oscillating applications, customized approaches to calculate L10 are used.^[17]

External factors [edit]

The service life of the bearing is affected by many parameters that are not controlled by the bearing manufacturers. For example, bearing mounting, temperature, exposure to external environment, lubricant cleanliness and electrical currents through bearings etc. High frequency *PWM* inverters can induce currents in a bearing, which can be suppressed by the use of ferrite chokes.

The temperature and terrain of the micro-surface will determine the amount of friction by the touching of solid parts.

Certain elements and fields reduce friction while increasing speeds.

Strength and mobility help determine the amount of load the bearing type can carry.

Alignment factors can play a damaging role in wear and tear, yet overcome by computer aid signaling and non-rubbing bearing types, such as magnetic levitation or air field pressure.

Mounting [edit]

There are many methods of mounting bearings, usually involving an interference fit.^[18] When press fitting or shrink fitting a bearing into a bore or onto a shaft, it's important to keep the housing bore and shaft outer diameter to very close limits, which can involve one or more counterboring operations, several facing operations, and drilling, tapping, and threading operations.^[19] Alternatively, an interference fit can also be achieved with the addition of a tolerance ring.

Maintenance and lubrication [edit]

Many bearings require periodic maintenance to prevent premature failure, but many others require little maintenance. The latter include various kinds of polymer, fluid and magnetic bearings, as well as rolling-element bearings that are described with terms including *sealed bearing* and *sealed for life*. These contain seals to keep the dirt out and the grease in. They work successfully in many applications, providing maintenance-free operation. Some applications cannot use them effectively.

Nonsealed bearings often have a grease fitting, for periodic lubrication with a grease gun, or an oil cup for periodic filling with oil. Before the 1970s, sealed bearings were not encountered on most machinery, and oiling and greasing were a more common activity than they are today. For example, automotive chassis used to require "lube jobs" nearly as often as engine oil changes, but today's car chassis are mostly sealed for life. From the late 1700s through the mid-1900s, industry relied on many workers called oilers to lubricate machinery frequently with oil cans.

Factory machines today usually have *lube systems*, in which a central pump serves periodic charges of oil or grease from a reservoir through *lube lines* to the various *lube points* in the machine's bearing surfaces, bearing journals, pillow blocks, and so on. The timing and number of such *lube cycles* is controlled by the machine's computerized control, such as PLC or CNC, as well as by manual override functions when occasionally needed. This automated process is how all modern CNC machine tools and many other modern factory machines are lubricated. Similar lube systems are also used on nonautomated machines, in which case there is a hand pump that a machine operator is supposed to pump once daily (for machines in constant use) or once weekly. These are called *one-shot systems* from their chief selling point: one pull on one handle to lube the whole machine, instead of a dozen pumps of an atermite gun or oil can in a dozen different positions around the machine.

The oiling system inside a modern automotive or truck engine is similar in concept to the lube systems mentioned above, except that oil is pumped continuously. Much of this oil flows through passages drilled or cast into the engine block and cylinder heads, escaping through ports directly onto bearings, and squirting elsewhere to provide an oil bath. The oil pump simply pumps constantly, and any excess pumped oil continuously escapes through a relief valve back into the sump.

Many bearings in high-cycle industrial operations need periodic lubrication and cleaning, and many require occasional adjustment, such as pre-load adjustment, to minimize the effects of wear.

Bearing life is often much better when the bearing is kept clean and well lubricated. However, many applications make good maintenance difficult. One example is bearings in the conveyor of a rock crusher are exposed continually to hard abrasive particles. Cleaning is of little use because cleaning is expensive yet the bearing is contaminated again as soon as the conveyor resumes operation. Thus, a good maintenance program might lubricate the bearings frequently but not include any disassembly for cleaning. The frequent lubrication, by its nature, provides a limited kind of cleaning action, by displacing older (grit-filled) oil or grease with a fresh charge, which itself collects grit before being displaced by the next cycle. Another example are bearings in wind turbines, which makes maintenance difficult since the nacelle is placed high up in the air in strong wind areas. In addition, the turbine does not always run and is subjected to different operating behavior in different weather conditions, which makes proper lubrication a challenge.^[20]

Packing [edit]

Some bearings use a thick grease for lubrication, which is pushed into the gaps between the bearing surfaces, also known as *packing*. The grease is held in place by a plastic, leather, or rubber gasket (also called a *gland*) that covers the inside and outside edges of the bearing race to keep the grease from escaping.

Bearings may also be packed with other materials. Historically, the wheels on railroad cars used sleeve bearings packed with waste or loose scraps of cotton or wool fiber soaked in oil, then later used solid pads of cotton.^[21]

Ring oiler [edit]

Further information: Ring oiler

Bearings can be lubricated by a metal ring that rides loosely on the central rotating shaft of the bearing. The ring hangs down into a chamber containing lubricating oil. As the bearing rotates, viscous adhesion draws oil up the ring and onto the shaft, where the oil migrates into the bearing to lubricate it. Excess oil is flung off and collects in the pool again.^[22]

Splash lubrication [edit]

A rudimentary form of lubrication is splash lubrication. Some machines contain a pool of lubricant in the bottom, with gears partially immersed in the liquid, or crank rods that can swing down into the pool as the device operates. The spinning wheels fling oil into the air around them, while the crank rods slap at the surface of the oil, splashing it randomly on the interior surfaces of the engine. Some small internal combustion engines specifically contain special plastic *flinger wheels* which randomly scatter oil around the interior of the mechanism.^[23]

Pressure lubrication [edit]

For high speed and high power machines, a loss of lubrication can result in rapid bearing failure and damage due to friction. Also in dirty environments, the oil can become contaminated with dust or debris that increase friction. In these applications, a fresh supply of lubricant

It is high speed and high power machines, a load of mechanical load when it is high speed bearing bearing area damage due to friction force is very tremendous, the oil film between components can not be broken, the lubrication can be continuously supplied to the bearing and all other contact surfaces, and the excess can be collected for filtration, cooling, and possibly reuse. Pressure oiling is commonly used in large and complex internal combustion engines in parts of the engine where directly splashed oil cannot reach, such as up into overhead valve assemblies^[24]. High speed turbochargers also typically require a pressurized oil system to cool the bearings and keep them from burning up due to the heat from the turbine.

Composite bearings [edit]

Composite bearings are designed with a self-lubricating polytetrafluoroethylene (PTFE) liner with a laminated metal backing. The PTFE liner offers consistent, controlled friction as well as durability whilst the metal backing ensures the composite bearing is robust and capable of withstanding high loads and stresses throughout its long life. Its design also makes it lightweight-one tenth the weight of a traditional rolling element bearing^[25]

Rolling-element bearing outer race fault detection [edit]



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Rolling-element bearings are widely used in the industries today, and hence maintenance of these bearings becomes an important task for the maintenance professionals. The rolling-element bearings wear out easily due to metal-to-metal contact, which creates faults in the outer race, inner race and ball. It is also the most vulnerable component of a machine because it is often under high load and high running speed conditions. Regular diagnostics of rolling-element bearing faults is critical for industrial safety and operations of the machines along with reducing the maintenance costs or avoiding shutdown time. Among the outer race, inner race and ball, the outer race tends to be more vulnerable to faults and defects.

There is still room for discussion as to whether the rolling element excites the natural frequencies of bearing component when it passes the fault on the outer race. Hence we need to identify the bearing outer race natural frequency and its harmonics. The bearing faults create impulses and results in strong harmonics of the fault frequencies in the spectrum of vibration signals. These fault frequencies are sometimes masked by adjacent frequencies in the spectra due to their little energy. Hence, a very high spectral resolution is often needed to identify these frequencies during a FFT analysis. The natural frequencies of a rolling element bearing with the free boundary conditions are 3 kHz^[*debious – discuss*]. Therefore, in order to use the bearing component resonance bandwidth method to detect the bearing fault at an initial stage a high frequency range accelerometer should be adopted, and data obtained from a long duration needs to be acquired. A fault characteristic frequency can only be identified when the fault extent is severe, such as that of the presence of a hole in the outer race. The harmonics of fault frequency is a more sensitive indicator of a bearing outer race fault. For a more serious detection of detected bearing faults waveform, spectrum and envelope techniques will help reveal these faults. However, if a high frequency demodulation is used in the envelope analysis in order to detect bearing fault characteristic frequencies, the maintenance professionals have to be more careful in the analysis because of resonance, as it may or may not contain fault frequency components.

Using spectral analysis as a tool to identify the faults in the bearings faces challenges due to issues like low energy, signal smearing, cyclostationarity etc. High resolution is often desired to differentiate the fault frequency components from the other high-amplitude adjacent frequencies. Hence, when the signal is sampled for FFT analysis, the sample length should be large enough to give adequate frequency resolution in the spectrum. Also, keeping the computation time and memory within limits^[*debious – discuss*] and avoiding unwanted aliasing may be demanding. However, a minimal frequency resolution required can be obtained by estimating the bearing fault frequencies and other vibration frequency components and its harmonics due to shaft speed, misalignment, line frequency, gearbox etc.

See also [edit]

- Axlebox
- Ball bearing – Type of rolling-element bearing
- Ball spline – Type of linear motion bearing that can transmit torque
- Bridge bearing
- Contact mechanics – Study of the deformation of solids that touch each other
- Journal bearing – Simplest type of bearing, comprising just a bearing surface and no rolling elements
- Hinge – Mechanical bearing connecting two objects
- Main bearing
- Needle roller bearing – Type of roller bearing which uses long, thin cylinders as rollers
- Pillow block bearing – Bracket used to provide support to rotating shafts
- Pitch bearing – Component connecting a turbine blade to the hub allowing pitch variation
- Plain bearing – Simplest type of bearing, comprising just a bearing surface and no rolling elements
- Pot bearing
- Race (bearing) – Track in a bearing along which the rolling elements ride
- Rolamite – Low friction bearing technology
- Rolling-element bearing – Bearing which carries a load with rolling elements placed between two grooved rings
- Scrollerwheel
- Shock pulse method
- Slewing bearing – Rotational support element for directional alignment
- Spherical plain bearing – Bearing that allow limited angular rotation orthogonal to the shaft axis
- Spherical roller bearing – Rolling-element bearing that tolerates angular misalignment
- Spiral groove bearing – Hydrodynamic bearings using spiral grooves to develop lubricant pressure

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External links

- ISO Dimensional system and bearing numbers ^l
- Comprehensive review on bearings, University of Cambridge ^l
- A glossary of bearing terms ^l
- How bearings work ^l
- Kinematic Models for Design Digital Library (KMDDL) ^l – Movies and photos of hundreds of working mechanical-systems models at Cornell University. Also includes an e-book library ^l of classic texts on mechanical design and engineering.
- Types of bearings, Cambridge University ^l



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(4) STANDARD CHARACTER MARK

SLB Enterprise Data
Solution

Mark Punctuated

SLB ENTERPRISE DATA SOLUTION

Translation

Goods/Services

- IC 042. US 100 101.G & S: Providing online non-downloadable software, namely, software operable on computers and networked computers for integrating geological data with natural resource operations data in the field of natural resource production; providing online non-downloadable software, namely, software operable on computers and networked computers for accessing electronic platforms that intake datasets, process datasets, explore datasets with software tools, and enable the intake of datasets by applications and services; providing dataset access controls via APIs; providing datasets for decision making in a scalable manner

Mark Drawing Code

(4) STANDARD CHARACTER MARK

Design Code

Serial Number

97596686

Filing Date

20220919

Current Filing Basis

1B

Original Filing Basis

1B

Publication for Opposition Date

Registration Number

Date Registered

Owner

(APPLICANT) Schlumberger Technology Corporation CORPORATION TEXAS MD 23 300 Schlumberger Drive Sugar Land TEXAS 77478

Priority Date

Disclaimer Statement

Description of Mark

Type of Mark

SERVICE MARK

Register
PRINCIPAL

Live Dead Indicator
LIVE

Attorney of Record
Margaret A. Boulware

United States Patent and Trademark Office (USPTO)

USPTO OFFICIAL NOTICE

Office Action (Official Letter) has issued
on November 08, 2022 for
U.S. Trademark Application Serial No. 97640756

A USPTO examining attorney has reviewed your trademark application and issued an Office action. You must respond to this Office action in order to avoid your application abandoning. Follow the steps below.

- (1) **[Read the Office action](#)**. This email is NOT the Office action.
- (2) **Respond to the Office action by the deadline** using the Trademark Electronic Application System (TEAS). Your response must be received by the USPTO on or before 11:59 p.m. **Eastern Time** of the last day of the response period. Otherwise, your application will be **[abandoned](#)**. See the Office action itself regarding how to respond.
- (3) **Direct general questions** about using USPTO electronic forms, the USPTO **[website](#)**, the application process, the status of your application, and whether there are outstanding deadlines to the **[Trademark Assistance Center \(TAC\)](#)**.

After reading the Office action, address any question(s) regarding the specific content to the USPTO examining attorney identified in the Office action.

GENERAL GUIDANCE

- **[Check the status of your application periodically](#)** in the **[Trademark Status & Document Retrieval \(TSDR\)](#)** database to avoid missing critical deadlines.
- **[Update your correspondence email address](#)** to ensure you receive important USPTO notices about your application.
- **[Beware of trademark-related scams](#)**. Protect yourself from people and companies that may try to take financial advantage of you. Private companies may call you and pretend to be the USPTO or may send you communications that resemble official USPTO documents to trick you. We will never request your credit card number or social security number over the phone. And all official USPTO correspondence will only be emailed from the domain “@uspto.gov.” Verify the correspondence originated from us by using your Serial Number in our database, **[TSDR](#)**, to confirm that it appears under the “Documents” tab, or contact the **[Trademark Assistance Center](#)**.

- **Hiring a U.S.-licensed attorney.** If you do not have an attorney and are not required to have one under the trademark rules, we encourage you to hire a U.S.-licensed attorney specializing in trademark law to help guide you through the registration process. The USPTO examining attorney is not your attorney and cannot give you legal advice, but rather works for and represents the USPTO in trademark matters.

To: Tim Curington(psdocketing@pattersonsheridan.com)
Subject: U.S. Trademark Application Serial No. 97640752 - SLB - SLBR/T003US
Sent: November 08, 2022 01:53:25 PM EST
Sent As: tmng.notices@uspto.gov

Attachments

[5643436](#)
[screenshot-en-wikipedia-org-wiki-Bearing_-mechanical-16679272559591](#)
[97596686](#)

**United States Patent and Trademark Office (USPTO)
Office Action (Official Letter) About Applicant's Trademark Application**

U.S. Application Serial No. 97640752

Mark: SLB

Correspondence Address:

TIM CURINGTON
PATTERSON & SHERIDAN, LLP
24 GREENWAY PLAZA
SUITE 1600
HOUSTON TX 77046 UNITED STATES

Applicant: Schlumberger Limited (Schlumberger N.V.)

Reference/Docket No. SLBR/T003US

Correspondence Email Address: psdocketing@pattersonsheridan.com

NONFINAL OFFICE ACTION

The USPTO must receive applicant's response to this letter within six months of the issue date below or the application will be **abandoned.** Respond using the Trademark Electronic Application System (TEAS). A link to the appropriate TEAS response form appears at the end of this Office action.

Issue date: November 08, 2022

The referenced application has been reviewed by the assigned trademark examining attorney. Applicant

must respond timely and completely to the issue(s) below. 15 U.S.C. §1062(b); 37 C.F.R. §§2.62(a), 2.65(a); TMEP §§711, 718.03.

SUMMARY OF ISSUES:

- Refusal Under Section 2(d) - Likelihood of Confusion
- ADVISORY: Prior Pending Application - Mark Not Entitled to Register
- Identification of Goods and Services
- Entity Clarification Required

REFUSAL UNDER SECTION 2(d) - LIKELIHOOD OF CONFUSION
THIS REFUSAL APPLIES TO CLASS 7 ONLY

Registration of the applied-for mark is refused because of a likelihood of confusion with the mark in U.S. Registration No. 5643436. Trademark Act Section 2(d), 15 U.S.C. §1052(d); *see* TMEP §§1207.01 *et seq.* See the attached registration.

Applicant's mark is **SLB** (and design) for goods and services including "Oil, gas, geothermal, water development, and carbon dioxide field equipment, namely, drilling rig mechanization machines and devices consisting of locks, nipples, expandables, cones, flow control devices, isolation valves, liner hangers, couplings, bushings, flotation equipment, centralizer equipment, manifolds, collars, monitoring devices, multilateral devices, packing devices, cables, retainers, stabilizers, hold openers, under reamers, whip stocks, mills, seals, plugs, drill bits, drill stems, drilling motors, drilling machines, drilling hammers, drilling impact tools, milling assemblies, percussion hammers, tongs, tubes, tubing, cutters, swivels, casing and tubing patches, injection equipment, swages, shakers, desanders, desilters, mud cleaning equipment, centrifuges, fluid processing equipment, straddles, spears, half-mule shoes, guide shoes, burn shoes, washover shoes, vacuums, retrieving tools, fishing tools, drilling rigs, bearings for use in drilling machines, rotors used in drilling machines, packers, stators being parts of drilling rigs machines, safety valves, rotating control devices, banding equipment, hangars, screening equipment, sensors, inflow control tools, slicklines, perforating devices, pumps, tubing, pipes, pipe joints, safety joints, accelerators, scrapers, exchangers, casings, cables, gas lifting devices, fluid separators, meters, power and control equipment, boosting equipment, vibration detectors, anchors, imaging equipment, wells, storage devices, tanks, hydraulic equipment, apparatus for the remote observation and operation of oil and gas drilling equipment, flow monitoring devices and thermometers all being devices for use with and part of drilling mechanization machines; pumps for use in irrigation systems; parts of oilfield wellhead machines, namely, chokes, degassers, and centrifuges. power operated pressure control equipment consisting of parts of oilfield wellhead machines, namely, chokes, degassers, centrifugal degassers, hydrogen sulfide mud gas separators, dual mud gas separators for horizontal drilling; rubber and metal mechanical o-ring seals used in equipment for oil and gas exploration and production; cutting machines and machine tools, namely, powered machines for cutting or shaping or finishing metals or other materials; precision machine tools, namely, hard metal tools, high speed steel (HSS) tools, carbide tools, ceramic tools, poly crystalline diamond (PCD) tools, and diamond-coated and diamond-uncoated tools, and hard metal tools, all for use in the cutting and forming of material by others; mechanical seals; air-operated power tools, namely, drills, grinders, and millers; drills for the mining industry; electric drills; pneumatic drills; power drills; power tools, namely, reamers; electric welding machines; laser welding machines; friction-stir welding tools; friction-stir welding machines; bits for mining machines; bits for power drills; core drilling bits; mining bits; tool bits for machines; bearings,

as parts of machines; roller bearings for machines; pump diaphragms; machines, namely, cementing equipment used in oil and gas exploration and production” in International Class 7.

Registrant’s mark is **SLB** (in stylized form) for “Anti-friction bearings for machines; Bearing brackets for machines; Bearings for transmission shafts, being parts of machines; Bearings, as parts of machines; Engine bearings; Lubrication machines; Machine parts, namely, roll mill bearings; Piston rings; Roller bearings for machines; Shaft bearings for vacuum pumps” in International Class 7.

Trademark Act Section 2(d) bars registration of an applied-for mark that is so similar to a registered mark that it is likely consumers would be confused, mistaken, or deceived as to the commercial source of the goods and/or services of the parties. *See* 15 U.S.C. §1052(d). Likelihood of confusion is determined on a case-by-case basis by applying the factors set forth in *In re E. I. du Pont de Nemours & Co.*, 476 F.2d 1357, 1361, 177 USPQ 563, 567 (C.C.P.A. 1973) (called the “*du Pont* factors”). *In re i.am.symbolic, llc*, 866 F.3d 1315, 1322, 123 USPQ2d 1744, 1747 (Fed. Cir. 2017). Any evidence of record related to those factors need be considered; however, “not all of the *DuPont* factors are relevant or of similar weight in every case.” *In re Guild Mortg. Co.*, 912 F.3d 1376, 1379, 129 USPQ2d 1160, 1162 (Fed. Cir. 2019) (quoting *In re Dixie Rests., Inc.*, 105 F.3d 1405, 1406, 41 USPQ2d 1531, 1533 (Fed. Cir. 1997)).

Although not all *du Pont* factors may be relevant, there are generally two key considerations in any likelihood of confusion analysis: (1) the similarities between the compared marks and (2) the relatedness of the compared goods and/or services. *See In re i.am.symbolic, llc*, 866 F.3d at 1322, 123 USPQ2d at 1747 (quoting *Herbko Int’l, Inc. v. Kappa Books, Inc.*, 308 F.3d 1156, 1164-65, 64 USPQ2d 1375, 1380 (Fed. Cir. 2002)); *Federated Foods, Inc. v. Fort Howard Paper Co.*, 544 F.2d 1098, 1103, 192 USPQ 24, 29 (C.C.P.A. 1976) (“The fundamental inquiry mandated by [Section] 2(d) goes to the cumulative effect of differences in the essential characteristics of the goods [or services] and differences in the marks.”); TMEP §1207.01.

Similarity of the Marks

When comparing marks, “[t]he proper test is not a side-by-side comparison of the marks, but instead whether the marks are sufficiently similar in terms of their commercial impression such that [consumers] who encounter the marks would be likely to assume a connection between the parties.” *Cai v. Diamond Hong, Inc.*, 901 F.3d 1367, 1373, 127 USPQ2d 1797, 1801 (Fed. Cir. 2018) (quoting *Coach Servs., Inc. v. Triumph Learning LLC*, 668 F.3d 1356, 1368, 101 USPQ2d 1713, 1721 (Fed. Cir. 2012)); TMEP §1207.01(b). The proper focus is on the recollection of the average purchaser, who retains a general rather than specific impression of trademarks. *In re Ox Paperboard, LLC*, 2020 USPQ2d 10878, at *4 (TTAB 2020) (citing *In re Bay State Brewing Co.*, 117 USPQ2d 1958, 1960 (TTAB 2016)); *In re Inn at St. John’s, LLC*, 126 USPQ2d 1742, 1746 (TTAB 2018); TMEP §1207.01(b); *see In re St. Helena Hosp.*, 774 F.3d 747, 750-51, 113 USPQ2d 1082, 1085 (Fed. Cir. 2014).

The respective marks, SLB and SLB, are highly similar in appearance, sound and meaning. The only difference is that registrant's mark is stylized and applicant's mark has a design.

However, the design and stylization elements of the marks do not obviate their similarity. For a composite mark containing both words and a design, the word portion may be more likely to be impressed upon a purchaser’s memory and to be used when requesting the goods and/or services. *Joel*

Gott Wines, LLC v. Rehoboth Von Gott, Inc., 107 USPQ2d 1424, 1431 (TTAB 2013) (citing *In re Dakin's Miniatures, Inc.*, 59 USPQ2d 1593, 1596 (TTAB 1999)); TMEP §1207.01(c)(ii); see *In re Viterra Inc.*, 671 F.3d 1358, 1362, 101 USPQ2d 1905, 1908, 1911 (Fed. Cir. 2012) (citing *CBS Inc. v. Morrow*, 708 F. 2d 1579, 1581-82, 218 USPQ 198, 200 (Fed. Cir 1983)). Thus, although such marks must be compared in their entireties, the word portion is often considered the dominant feature and is accorded greater weight in determining whether marks are confusingly similar, even where the word portion has been disclaimed. *In re Viterra Inc.*, 671 F.3d at 1366, 101 USPQ2d at 1911 (Fed. Cir. 2012) (citing *Giant Food, Inc. v. Nation's Foodservice, Inc.*, 710 F.2d 1565, 1570-71, 218 USPQ2d 390, 395 (Fed. Cir. 1983)).

Here, the respective designs do not make the marks distinct enough to avoid confusion because the literal elements of the marks are more significant or dominant than the designs. Thus, the marks are likely to be confused because both marks share the letters "SLB".

Thus, the applied-for mark is confusingly similar to the mark in the cited registration because the marks share the identical literal element, which gives the marks the same commercial impression.

Relatedness of the Goods

The applicant's "Oil, gas, geothermal, water development, and carbon dioxide field equipment, namely, drilling rig mechanization machines and devices consisting of locks, nipples, expandables, cones, flow control devices, isolation valves, liner hangers, couplings, bushings, flotation equipment, centralizer equipment, manifolds, collars, monitoring devices, multilateral devices, packing devices, cables, retainers, stabilizers, hold openers, under reamers, whip stocks, mills, seals, plugs, drill bits, drill stems, drilling motors, drilling machines, drilling hammers, drilling impact tools, milling assemblies, percussion hammers, tongs, tubes, tubing, cutters, swivels, casing and tubing patches, injection equipment, swages, shakers, desanders, desilters, mud cleaning equipment, centrifuges, fluid processing equipment, straddles, spears, half-mule shoes, guide shoes, burn shoes, washover shoes, vacuums, retrieving tools, fishing tools, drilling rigs, bearings for use in drilling machines, rotors used in drilling machines, packers, stators being parts of drilling rigs machines, safety valves, rotating control devices, banding equipment, hangars, screening equipment, sensors, inflow control tools, slicklines, perforating devices, pumps, tubing, pipes, pipe joints, safety joints, accelerators, scrapers, exchangers, casings, cables, gas lifting devices, fluid separators, meters, power and control equipment, boosting equipment, vibration detectors, anchors, imaging equipment, wells, storage devices, tanks, hydraulic equipment, apparatus for the remote observation and operation of oil and gas drilling equipment, flow monitoring devices and thermometers all being devices for use with and part of drilling mechanization machines; pumps for use in irrigation systems; parts of oilfield wellhead machines, namely, chokes, degassers, and centrifuges. power operated pressure control equipment consisting of parts of oilfield wellhead machines, namely, chokes, degassers, centrifugal degassers, hydrogen sulfide mud gas separators, dual mud gas separators for horizontal drilling; rubber and metal mechanical o-ring seals used in equipment for oil and gas exploration and production; cutting machines and machine tools, namely, powered machines for cutting or shaping or finishing metals or other materials; precision machine tools, namely, hard metal tools, high speed steel (HSS) tools, carbide tools, ceramic tools, poly crystalline diamond (PCD) tools, and diamond-coated and diamond-uncoated tools, and hard metal tools, all for use in the cutting and forming of material by others; mechanical seals; air-operated power tools, namely, drills, grinders, and millers; drills for the mining industry; electric drills; pneumatic drills; power drills; power tools, namely, reamers; electric welding machines; laser welding machines; friction-stir welding tools; friction-stir welding machines; bits for mining

machines; bits for power drills; core drilling bits; mining bits; tool bits for machines; bearings, as parts of machines; roller bearings for machines; pump diaphragms; machines, namely, cementing equipment used in oil and gas exploration and production” are closely related to the registrant’s “Anti-friction bearings for machines; Bearing brackets for machines; Bearings for transmission shafts, being parts of machines; Bearings, as parts of machines; Engine bearings; Lubrication machines; Machine parts, namely, roll mill bearings; Piston rings; Roller bearings for machines; Shaft bearings for vacuum pumps” because these goods are broad enough to overlap, and are otherwise complementary.

Determining likelihood of confusion is based on the description of the goods and/or services stated in the application and registration at issue, not on extrinsic evidence of actual use. *See In re Detroit Athletic Co.*, 903 F.3d 1297, 1307, 128 USPQ2d 1047, 1052 (Fed. Cir. 2018) (citing *In re i.am.symbolic, llc*, 866 F.3d 1315, 1325, 123 USPQ2d 1744, 1749 (Fed. Cir. 2017)).

In this case, the registration uses broad wording to describe "bearings, as parts of machines," which presumably encompasses all goods of the type described, including applicant’s more narrow "bearings for use in drilling machines." *See, e.g., In re Solid State Design Inc.*, 125 USPQ2d 1409, 1412-15 (TTAB 2018); *Sw. Mgmt., Inc. v. Ocinomled, Ltd.*, 115 USPQ2d 1007, 1025 (TTAB 2015). Thus, applicant’s and registrant’s goods are legally identical in part. *See, e.g., In re i.am.symbolic, llc*, 127 USPQ2d 1627, 1629 (TTAB 2018) (citing *Tuxedo Monopoly, Inc. v. Gen. Mills Fun Grp., Inc.*, 648 F.2d 1335, 1336, 209 USPQ 986, 988 (C.C.P.A. 1981); *Inter IKEA Sys. B.V. v. Akea, LLC*, 110 USPQ2d 1734, 1745 (TTAB 2014); *Baseball Am. Inc. v. Powerplay Sports Ltd.*, 71 USPQ2d 1844, 1847 n.9 (TTAB 2004)).

Additionally, the parties' goods are complementary. The goods and/or services are compared to determine whether they are similar, commercially related, or travel in the same trade channels. *See Coach Servs., Inc. v. Triumph Learning LLC*, 668 F.3d 1356, 1369-71, 101 USPQ2d 1713, 1722-23 (Fed. Cir. 2012); *Herbko Int’l, Inc. v. Kappa Books, Inc.*, 308 F.3d 1156, 1165, 64 USPQ2d 1375, 1381 (Fed. Cir. 2002); TMEP §§1207.01, 1207.01(a)(vi).

The compared goods and/or services need not be identical or even competitive to find a likelihood of confusion. *See On-line Careline Inc. v. Am. Online Inc.*, 229 F.3d 1080, 1086, 56 USPQ2d 1471, 1475 (Fed. Cir. 2000); *Recot, Inc. v. Becton*, 214 F.3d 1322, 1329, 54 USPQ2d 1894, 1898 (Fed. Cir. 2000); TMEP §1207.01(a)(i). They need only be “related in some manner and/or if the circumstances surrounding their marketing are such that they could give rise to the mistaken belief that [the goods and/or services] emanate from the same source.” *Coach Servs., Inc. v. Triumph Learning LLC*, 668 F.3d 1356, 1369, 101 USPQ2d 1713, 1722 (Fed. Cir. 2012) (quoting *7-Eleven Inc. v. Wechsler*, 83 USPQ2d 1715, 1724 (TTAB 2007)); TMEP §1207.01(a)(i).

In this case, the attached internet evidence and identifications of goods show that applicant's goods consist of machines and machine parts, and registrant's goods are bearings, which are machine parts that restrict movement and reduce friction between moving parts in machines. This evidence establishes that the goods are similar or complementary in terms of purpose or function because registrant's goods serve as components of applicant's goods. Thus, applicant’s and registrant’s goods are considered related for likelihood of confusion purposes. *See, e.g., In re Davey Prods. Pty Ltd.*, 92 USPQ2d 1198, 1202-04 (TTAB 2009); *In re Toshiba Med. Sys. Corp.*, 91 USPQ2d 1266, 1268-69, 1271-72 (TTAB 2009).

In summary, the applicant’s and registrant’s marks are confusingly similar, and the respective goods are highly related. Therefore, consumers are likely to be confused and mistakenly believe that these goods

emanate from a common source. Accordingly, registration must be refused under Section 2(d) of the Trademark Act.

Although applicant's mark has been refused registration, applicant may respond to the refusal(s) by submitting evidence and arguments in support of registration.

ADVISORY: PRIOR PENDING APPLICATION - MARK NOT ENTITLED TO REGISTER

The filing date of pending U.S. Application Serial No. 97596686 precedes applicant's filing date. See attached referenced application. If the mark in the referenced application registers, applicant's mark may be refused registration under Trademark Act Section 2(d) because of a likelihood of confusion between the two marks. *See* 15 U.S.C. §1052(d); 37 C.F.R. §2.83; TMEP §§1208 *et seq.* Therefore, upon receipt of applicant's response to this Office action, action on this application may be suspended pending final disposition of the earlier-filed referenced application.

In response to this Office action, applicant may present arguments in support of registration by addressing the issue of the potential conflict between applicant's mark and the mark in the referenced application. Applicant's election not to submit arguments at this time in no way limits applicant's right to address this issue later if a refusal under Section 2(d) issues.

Ownership of Mark in Potentially Conflicting Application

If the mark(s) in the potentially conflicting prior-filed application(s) has been assigned to applicant, applicant may provide evidence of ownership of the mark(s) to avoid a possible refusal under Trademark Act Section 2(d) based on a likelihood of confusion. *See* 15 U.S.C. §1052(d); TMEP §812.01.

Applicant may provide evidence of ownership of the mark(s) by satisfying one of the following:

(1) Record the assignment with the USPTO's Assignment Recordation Branch (ownership transfer documents such as assignments can be filed online at <http://etas.uspto.gov>) and promptly notify the trademark examining attorney that the assignment has been duly recorded;

(2) Submit copies of documents evidencing the chain of title; or

(3) Submit the following statement, **verified with an affidavit or signed declaration** under 37 C.F.R. §2.20: "**Applicant is the owner of Application Serial No(s). 97596686.**" To provide this statement using the Trademark Electronic Application System (TEAS), use the "[Response to Office Action](#)" form; answer "yes" to wizard questions #3 and #9; then, continuing on to the next portion of the form, in the "Additional Statement(s)" section, check the box for "Miscellaneous Statement" and write in the free form text field for the "Miscellaneous Statement" that "Applicant is the owner of Application Serial No(s). 97596686," inserting the relevant application serial number(s); and follow the instructions within the form for signing. The form must be signed twice; a signature is required both in the "Declaration Signature" section and in the "Response Signature" section.

TMEP §812.01; *see* 15 U.S.C. §1060; 37 C.F.R. §§2.193(e)(1), 3.25, 3.73(a)-(b); TMEP §502.02(a).

Recording a document with the Assignment Recordation Branch does not constitute a response to an Office action. TMEP §503.01(d).

IDENTIFICATION OF GOODS AND SERVICES

The identification of goods and services must be amended because some wording is indefinite, too broad, and misclassified.

Class 1

The wording “acids for use in oil and gas exploration and production” in the identification of goods is indefinite and must be clarified because the type of acid provided is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: “boric acid.”

The wording “chemical preparations, namely, cleaning solvents used in oil and gas exploration and production” in the identification of goods for International Class 1 must be clarified because it is too broad and could include goods in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. In particular, this wording could encompass "chemical cleaners" in Class 3.

Applicant may incorporate the following wording, if accurate: "degreasing solvents" in Class 1.

Class 7

The wording “Oil, gas, geothermal, water development, and carbon dioxide field equipment, namely, drilling rig mechanization machines and devices consisting of locks, nipples, expandables, cones, flow control devices, isolation valves, liner hangers, couplings, bushings, flotation equipment, centralizer equipment, manifolds, collars, monitoring devices, multilateral devices, packing devices, cables, retainers, stabilizers, hold openers, under reamers, whip stocks, mills, seals, plugs, drill bits, drill stems, drilling motors, drilling machines, drilling hammers, drilling impact tools, milling assemblies, percussion hammers, tongs, tubes, tubing, cutters, swivels, casing and tubing patches, injection equipment, swages, shakers, desanders, desilters, mud cleaning equipment, centrifuges, fluid processing equipment, straddles, spears, half-mule shoes, guide shoes, burn shoes, washover shoes, vacuums, retrieving tools, fishing tools, drilling rigs, bearings for use in drilling machines, rotors used in drilling machines, packers, stators being parts of drilling rigs machines, safety valves, rotating control devices, banding equipment, hangars, screening equipment, sensors, inflow control tools, slicklines, perforating devices, pumps, tubing, pipes, pipe joints, safety joints, accelerators, scrapers, exchangers, casings, cables, gas lifting devices, fluid separators, meters, power and control equipment, boosting equipment, vibration detectors, anchors, imaging equipment, wells, storage devices, tanks, hydraulic equipment, apparatus for the remote observation and operation of oil and gas drilling equipment, flow monitoring devices and thermometers all being devices for use with and part of drilling mechanization machines” in the identification of goods is indefinite and must be clarified because it is unclear whether this wording is listing particular devices that are sold separately and specially adapted for drilling rig mechanization machines, or component parts of drilling rig

mechanization machines. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant must clarify the items listed and their relationship to drilling rig mechanization machines using their common commercial names.

The wording “rubber and metal mechanical o-ring seals used in equipment for oil and gas exploration and production” in the identification of goods for International Class 7 must be clarified because it is too broad and could include goods in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. If these goods are "machine parts," applicant must so specify and keep these goods in International Class 7.

The wording “electric drills; pneumatic drills” in the identification of goods is indefinite and must be clarified because the type of drill provided is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may substitute the following wording, if accurate: “electric power drills; pneumatic hand-held drills.”

The wording “friction-stir welding tools; friction-stir welding machines” in the identification of goods is indefinite and must be clarified because the particular tools and machines are unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: “welding torches” and "electric welding machines."

The wording “machines, namely, cementing equipment used in oil and gas exploration and production” in the identification of goods for International Class 7 must be clarified because it is too broad and could include goods in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. In particular, this wording could encompass cement testing machines in Class 9.

Applicant may incorporate the following wording, if accurate, in Class 9: cement testing machines.

Class 9

The wording "Scientific, nautical, surveying, photographic, cinematographic, optical, weighing, measuring, signaling, checking (supervision), life-saving and teaching apparatus and instruments; apparatus and instruments for conducting, switching, transforming, accumulating, regulating or controlling electricity; apparatus for recording, transmission or reproduction of sound or images; magnetic data carriers, recording discs" is too broad and must be clarified because it consists of or includes international class heading(s) for Class 9 and could identify goods and/or services in more than the classes specified. *See* 37 C.F.R. §§2.85(e), (f), 2.32(a)(6); TMEP §§1401.02(a), 1401.08. The USPTO generally considers class headings, whose sole purpose is to indicate the subject matter and general scope of each international class of goods and/or services, to be too broadly worded to identify goods and/or services in a U.S. application. *See In re Societe Generale des Eaux Minerales de Vittel S.A.*, 1 USPQ2d 1296, 1298-99 (TTAB 1986), *rev'd on other grounds*, 824 F.2d 957, 3 USPQ2d 1450 (Fed. Cir. 1987); TMEP §§1401.02(a), 1401.08, 1402.01 *et seq.*, 1402.07(a).

For amendments to identifications consisting of class headings, the scope of the identification is limited to the ordinary meaning of the words in the heading. *See In re Fiat Grp. Mktg. & Corp. Commc'ns S.p.A.*, 109 USPQ2d 1593, 1598 (TTAB 2014); TMEP §§1402.06(a), (b), 1402.07(a). Accordingly, applicant must amend the identification to specify goods and/or services that fall within the ordinary meaning of the words in the class heading(s). *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.06(a), (b), 1402.07(a).

The wording "Automatic vending machines" classified incorrectly. Applicant must amend the application to classify the goods in International Class 7. *See* 37 C.F.R. §§2.32(a)(7), 2.85; TMEP §§1401.02(a), 1401.03(b).

The identification for software and firmware in International Class 9 is indefinite and too broad and must be clarified to specify (1) the purpose or function of the software and its content or field of use, if content- or field- specific; and (2) whether its format is downloadable, recorded, or online non-downloadable. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.03(d), 1402.11(a). Downloadable and recorded goods are in International Class 9, whereas providing their temporary, online non-downloadable use is a service in International Class 42. *See* TMEP §1402.03(d).

The USPTO requires such specificity in order for a trademark examining attorney to examine the application properly and make appropriate decisions concerning possible conflicts between the applicant's mark and other marks. *See In re N.A.D. Inc.*, 57 USPQ2d 1872, 1874 (TTAB 2000); TMEP §1402.03(d).

The wording "micro-processor computer controlled rig floor monitors which monitor and display various drilling functions with alarms" in the identification of goods is indefinite and must be clarified because the type of monitor and matter monitored is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: "gas flow monitors."

The wording "electronic drilling recorders, namely, micro-processor controlled drilling mud logging equipment for use in logging drilling fluid pressure, temperature, viscosity and composition" in the identification of goods is indefinite and must be clarified because the nature of this "equipment" is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: "sensors."

The wording "laser welding devices; welding electrodes" in the identification of goods for International Class 9 must be clarified because it is too broad and could include goods in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. In particular, this wording could encompass "laser welding machines; electrodes for welding machines" in Class 7.

Applicant may substitute the following wording, if accurate: "laser welding machines; electrodes for welding machines" in Class 7.

The wording "equipment for the production of hydrogen energy; equipment used in the lithium extraction process; equipment for the capture and storage of carbon, equipment for the use of geoenery or geothermal power;" in the identification of goods is indefinite and must be clarified because the nature of the equipment is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant must specify the common commercial names of these goods.

Class 13

The wording "such as" in "Explosive substances and projectiles, such as shaped charges, for use in perforating metal casing lining and oil well along with the adjoining earth formation" in the identification of goods is indefinite and must be clarified because it fails to identify specific goods. *See* TMEP §1402.03(a). Therefore, applicant must delete this indefinite wording from the identification and

specify the common commercial or generic name for these goods.

In an identification, an applicant must use the common commercial or generic name for the goods, be specific and all-inclusive, and avoid using indefinite words or phrases. TMEP §§1402.01, 1402.03(a). Further, applicant may amend the identification to list only those items that are within the scope of the goods set forth in the initial application or as acceptably amended. *See* 37 C.F.R. §2.71(a); TMEP §§1402.06 *et seq.*, 1402.07. Scope is generally determined by the ordinary meaning of the wording in the identification. TMEP §1402.07(a).

Applicant may substitute the following wording, if accurate: "Explosive substances and projectiles, namely, shaped charges, for use in perforating metal casing lining and oil well along with the adjoining earth formation. " Applicant should also delete the duplicative instance of the problematic wording.

Class 35

The wording "online supply and procurement for others, namely, purchasing of goods and services related to the fields of oil and gas exploration and production" in the identification of services is indefinite and must be clarified because the goods and services procured are unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant must specify the goods and services procured.

The wording "providing a database featuring oil and gas properties for possible leasing or acquisition; providing an online database consisting of regulatory information in the fields of oil and gas exploration and production for business purposes" in the identification of services for International Class 35 must be clarified because it is too broad and could include services in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. Services for providing an online database are classified by the subject matter of the database. For example, providing a database in the field of leasing of real property would be classified in International Class 36.

Applicant may substitute the following wording, if accurate: "Providing an on-line searchable database featuring real property for lease for oil and gas production" in Class 36 and "Providing an on-line searchable database for business purposes featuring information on regulations in the field of oil and gas exploration and production" in Class 45.

The wording "transportation logistics services, namely, planning and scheduling of drilling rigs and vessels used in oil and gas exploration and production" in the identification of services is indefinite and must be clarified because it is unclear whether the planning and scheduling is for transportation. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: planning and scheduling of vessel transport of drilling rigs.

Class 37

The wording "sand control services related to the fields of oil and gas well drilling; fishing and retrieval services in the fields of oil and gas well drilling" in the identification of services is indefinite and must be clarified because the purpose of these activities is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: Maintenance of oil well casings, tubing and drill pipes.

The wording “artificial lift services in the fields of oil and gas well drilling” in the identification of services is indefinite and must be clarified because the nature of these services is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: oil pumping.

The wording “provision of equipment used to separate oil from water” in the identification of services is indefinite and must be clarified because the nature of "provision" activities is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may substitute the following wording, if accurate: Installation, maintenance and repair of oil separators.

The wording “rental of tools and drilling equipment in connection with the fields of geothermal resources, water management, and carbon dioxide storage and containment; . . . rental of equipment used in connection with irrigation services and oil and gas exploration and production” in the identification of services is indefinite and must be clarified because the nature of the tools and equipment rented is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: rental of drilling platforms; rental of oil well drilling tools.

The wording "rental of tractors used in oil and gas exploration and production; . . . waste oil collection and recycling" classified incorrectly. Applicant must amend the application to classify the goods and/or services in International Class 39. *See* 37 C.F.R. §§2.32(a)(7), 2.85; TMEP §§1401.02(a), 1401.03(b).

The wording “irrigation devices, installation and repair” in the identification of services is indefinite and must be clarified because the wording is grammatically ambiguous. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may substitute the following wording, if accurate: installation and repair of irrigation devices.

The wording “rental of equipment used in connection with irrigation services and oil and gas exploration and production” in the identification of services for International Class 37 must be clarified because it is too broad and could include services in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. In particular, this wording could encompass "Oil well prospecting, namely, perforation," in Class 40. Applicant must clarify the purpose of the services and classify the services appropriately.

Class 42

The wording “testing, analysis, and evaluation of oil and gas reserves” in the identification of services is indefinite and must be clarified because the property tested is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: analysis of oil and gas quality.

The wording “oil and gas well drilling services, namely, providing measurements and downhole telemetry while drilling” in the identification of services for International Class 42 must be clarified because it is too broad and could include services in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. In particular, this wording could encompass oil well drilling in Class 37 and Providing measurements and downhole telemetry while drilling oil and gas wells in Class 42. Applicant must separate these activities into their respective appropriate classes.

The wording “conducting environmental studies in the fields of oil and gas exploration and production,

geothermal resources, water management, storage and containment or carbon dioxide” in the identification of services is indefinite and must be clarified because the type of study is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: conducting wellbore survey services.

The wording “oil and gas well logging, testing, analysis, inspection, and sampling” in the identification of services is indefinite and must be clarified because the matter analyzed, inspected, and sampled is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: Inspection services, namely, detection of leaks in {indicate specific item, e.g., hot tubs, spas}.

The wording “recovery services in the fields of oil and gas exploration and production; to retrieve instruments and tools lost in a well” in the identification of services for International Class 42 must be clarified because it is too broad and could include services in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. In particular, this wording could encompass "Well improvement services, namely, hydraulic fracturing of subsurface geologic formations to enhance well production" and "excavation" in Class 37.

Applicant may substitute the following wording, if accurate: "recovery services, namely, excavation to recover lost instruments and tools in well during oil and gas exploration and production; Well improvement services, namely, hydraulic fracturing of subsurface geologic formations to enhance well production" in Class 37.

The wording “engineering modeling and design of drilling processes and operation of facilities used in oil and gas exploration and production” in the identification of services is indefinite and must be clarified because the matter engineered, modeled, and designed is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may substitute the following wording, if accurate: Design of seismic acquisition parameters, namely, models or plans for acquiring seismic data in connection with drilling operations.

The wording “digital solutions in the fields of oil and gas exploration and production for the optimization of production, including cloud based solutions, software-as-a-service solutions, machine learning, artificial intelligence, and on-premise solutions” in the identification of services is indefinite and must be clarified because the nature of "solutions" is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may substitute the following wording, if accurate: Software as a service (SAAS) services featuring software for {specify the function of the programs, e.g., for use in database management, for use as a spreadsheet, for word processing, etc. and, if software is content - or field-specific, the field of use}.

The wording “interpretation and analysis for the petroleum industry in methods and products for interpreting oil and gas well data obtained during the provision of testing services” in the identification of services is indefinite and must be clarified because this wording is grammatically ambiguous and the subject matter of the services is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant must specify the common commercial name of the services and clearly state their subject matter.

The wording “providing early production and extended well test facilities and plants for others to allow production of oil and gas while full field development is being planned and permanent facilities are being built” in the identification of services for International Class 42 must be clarified because it is too broad and could include services in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP

§§1402.01, 1402.03. In particular, this wording could encompass facilities for oil production in Class 40.

Applicant may incorporate the following wording, if accurate: Rental of oil well testing facilities, in Class 42.

The wording “subterranean well testing services for use in connection with subterranean oil well drilling operations” in the identification of services is indefinite and must be clarified because the type of well tested is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: oil well testing.

The wording “providing technical advice on drilling fluids and drilling fluid use and technical advice on data control, products control, and pressure control” in the identification of services for International Class 42 must be clarified because it is too broad and could include services in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. In particular, this wording could encompass advice in the field of oil and gas drilling in Class 37. Applicant must clarify the subject matter of its advice services and classify these services appropriately.

The wording “providing oil well pressure control testing services for others in the oil and gas industries” in the identification of services is indefinite and must be clarified because it is unclear whether these services are a type of oil well testing. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may incorporate the following wording, if accurate: oil well testing.

The wording “engineering, consulting, and testing services in connection with exploring and developing geothermal resources, water management, and carbon dioxide storage and containment” in the identification of services is indefinite and must be clarified because the field of the consulting services and the matter tested are unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. If these services are in the field of "research and development in the field of geothermal energy," applicant must so specify.

The wording “software rental services in connection with the fields of geothermal resources, water management and carbon dioxide storage and containment” in the identification of services is indefinite and must be clarified because the function of the software is unclear. *See* 37 C.F.R. §2.32(a)(6); TMEP §1402.01. Applicant may substitute the following wording, if accurate: Rental of computer software for {indicate function of software, e.g., playing games, editing digital photos, etc.}.

The wording “carbon capture and storage services; lithium extraction services; geothermal power production and distribution services; and hydrogen production, storage and distribution services” in the identification of services for International Class 42 must be clarified because it is too broad and could include services in other international classes. *See* 37 C.F.R. §2.32(a)(6); TMEP §§1402.01, 1402.03. In particular, this wording could encompass Physical storage of captured carbon dioxide (CO₂) for others in Class 39, mining extraction in Class 37, generating electricity in Class 40, and gas production in Class 40. Applicant must clarify the nature of the services and classify the services appropriately.

Suggested Identification of Goods and Services

To address the indefinite and overly broad wording discussed above, applicant may adopt any or all of the following identification of goods and services. Suggested changes are shown in bold, strike-

through, and underlined font.

International Class 001: **Boric acids** used in oil and gas exploration and production; hydraulic fluid; chemical preparations, namely, **cleaning degreasing** solvents used in oil and gas exploration and production; chemicals used in oil drilling; drilling muds for use in oil and gas well drilling; chemicals for welding; gases for welding; metal welding flux; chemical drilling fluids for use in subterranean wells, namely, drilling muds, completion fluids, workover fluids and wellbore fluids; chemical additives for use with drilling fluids; chemical drilling fluids for use in oil well drilling; hydrogen as energy carrier; and lithium as part of a renewal energy system

International Class 007: Oil, gas, geothermal, water development, and carbon dioxide field equipment, namely, drilling rig mechanization machines and devices ~~consisting of locks, nipples, expandables, cones, flow control devices, isolation valves, liner hangers, couplings, bushings, flotation equipment, centralizer equipment, manifolds, collars, monitoring devices, multilateral devices, packing devices, cables, retainers, stabilizers, hold openers, under reamers, whip stocks, mills, seals, plugs, drill bits, drill stems, drilling motors, drilling machines, drilling hammers, drilling impact tools, milling assemblies, percussion hammers, tongs, tubes, tubing, cutters, swivels, casing and tubing patches, injection equipment, swages, shakers, desanders, desilters, mud cleaning equipment, centrifuges, fluid processing equipment, straddles, spears, half mule shoes, guide shoes, burn shoes, washover shoes, vacuums, retrieving tools, fishing tools, drilling rigs, bearings for use in drilling machines, rotors used in drilling machines, packers, stators being parts of drilling rigs machines, safety valves, rotating control devices, banding equipment, hangars, screening equipment, sensors, inflow control tools, slicklines, perforating devices, pumps, tubing, pipes, pipe joints, safety joints, accelerators, scrapers, exchangers, casings, cables, gas lifting devices, fluid separators, meters, power and control equipment, boosting equipment, vibration detectors, anchors, imaging equipment, wells, storage devices, tanks, hydraulic equipment, apparatus for the remote observation and operation of oil and gas drilling equipment, flow monitoring devices and thermometers all being devices for use with and part of drilling mechanization machines~~; structural and replacement parts for drilling rig mechanization machines, namely, {specify common commercial names of parts, e.g., coupling for machines}; {specify common commercial names of goods, e.g., anchors} specially adapted for use with drilling rig mechanization machines; pumps for use in irrigation systems; parts of oilfield wellhead machines, namely, chokes, degassers, and centrifuges. power operated pressure control equipment consisting of parts of oilfield wellhead machines, namely, chokes, degassers, centrifugal degassers, hydrogen sulfide mud gas separators, dual mud gas separators for horizontal drilling; **Machine parts, namely,** rubber and metal mechanical o-ring seals used in equipment for oil and gas exploration and production; cutting machines and machine tools, namely, powered machines for cutting or shaping or finishing metals or other materials; precision machine tools, namely, hard metal tools, high speed steel (HSS) tools, carbide tools, ceramic tools, poly crystalline diamond (PCD) tools, and diamond-coated and diamond-uncoated tools, and hard metal tools, all for use in the cutting and forming of material by others; mechanical seals; air-operated power tools, namely, drills, grinders, and millers; drills for the mining industry; electric **power** drills; pneumatic **hand-held** drills; power drills; power tools, namely, reamers; electric welding machines; laser welding machines; friction-stir welding tools, **namely, welding torches; electric welding machines, namely** friction-stir welding machines; bits for mining machines; bits for power drills; core

drilling bits; mining bits; tool bits for machines; bearings, as parts of machines; roller bearings for machines; pump diaphragms; ~~machines, namely, cementing equipment used in oil and gas exploration and production~~ automatic vending machines; laser welding machines; electrodes for welding machines

International Class 009: ~~Scientific, nautical, surveying, photographic, cinematographic, optical, weighing, measuring, signaling, checking (supervision), life-saving and teaching apparatus and instruments; apparatus and instruments for conducting, switching, transforming, accumulating, regulating or controlling electricity; apparatus for recording, transmission or reproduction of sound or images; magnetic data carriers, recording discs~~ {specify common commercial names of goods within scope of wording, e.g., cameras}; ~~automatic vending machines and~~ mechanisms for coin-operated apparatus; cash registers, calculating machines, data processing equipment and computers; fire extinguishing apparatus; ~~recorded~~ computer software ~~and manuals distributed therewith to process~~ for processing data used for oil and gas exploration and production in locating, evaluating and producing hydrocarbons, and printed instruction manuals sold as a unit; downloadable computer firmware for digital enablement of oilfield tools; automated self-contained electronic surveillance devices that can be deployed to gather information in oil and gas exploration and production facilities; testing and measuring equipment used in oil and gas exploration and production facilities to test performance and efficiency of oil and gas well equipment; petroleum industry equipment, namely, electronic rig instrumentation for monitoring well pressure and volume of returned drilling fluid; micro-processor computer controlled rig floor gas flow monitors which monitor and display various gas flow during drilling functions with alarms; electronic pit volume totalizers and return flow sensors for use in blow-out prevention or monitoring of drilling fluid pressure, temperature, viscosity, and composition; electronic drilling recorders, namely, micro-processor controlled drilling mud logging ~~equipment~~ for use in sensing and logging drilling fluid pressure, temperature, viscosity and composition; electric cables, fiber optic cables; cement testing machines; ~~laser welding devices; welding electrodes; welding transformers; magnets for industrial purposes; magnets used in oil and gas exploration and production; equipment for the production of hydrogen energy; equipment used in the lithium extraction process; equipment for the capture and storage of carbon, equipment for the use of geenergy or geothermal power~~ {list common commercial names of goods in Class 9}; {specify downloadable or recorded} computer software for {specify function of software}; cement testing machines used in the oil and gas industry.

International Class 012: Tractors used in oil and gas exploration and production; trucks equipped with apparatus to conduct services well testing, evaluating, drilling, completing, producing and repairing rendered in connection with oil and gas wells, and for acquiring, processing, interpreting, storing, presenting and transmitting from one location to another of well site logging data; boats and barges equipped with pumping equipment for fracturing, acidizing, cementing, and sand control in connection with oil and gas wells; land vehicles for cable inspection and on-site oil and gas well measurements

International Class 013: Explosive substances and projectiles, ~~such as namely,~~ shaped charges, for use in perforating metal casing lining and oil well along with the adjoining earth formation: ~~Explosive substances and projectiles, such as shaped charges, for use in perforating metal casing lining and oil well along with the adjoining earth formation~~

International Class 035: Managing the exploration, production and operations of gas and oil

properties for others; advertising and marketing services, namely, promoting the goods and services of others in the fields of oil and gas exploration and production; online supply and procurement for others, namely, purchasing of ~~goods and services {specify goods or services, e.g., weapons, office furniture}~~ related to the fields of oil and gas exploration and production; ~~providing a database featuring oil and gas properties for possible leasing or acquisition; providing an online database consisting of regulatory information in the fields of oil and gas exploration and production for business purposes;~~ transportation logistics services, namely, planning and scheduling of ~~drilling rigs and vessels~~ vessel transport of drilling rigs used in oil and gas exploration and production; data processing services in the fields of oil and gas exploration and production; business consulting services for the energy industry related to establishing and improving business functions, namely, corporate and project strategies, organization management, operations management, operations improvement, technology management, mergers and acquisitions, and company integration

International Class 036: Providing an on-line searchable database featuring real property for lease for oil and gas production.

International Class 037: Construction project management services for others in the fields of oil and gas exploration and production; oil and gas drilling; consulting services in the fields of oil and gas well drilling; Maintenance of oil well casings, tubing, and drill pipes, namely, sand control services related to the fields of oil and gas well drilling; Maintenance of oil well casings, tubing, and drill pipes, namely, fishing and retrieval services in the fields of oil and gas well drilling; Oil pumping, namely, artificial lift services in the fields of oil and gas well drilling; ~~provision of equipment used to separate oil from water~~ Installation, maintenance and repair of oil separators; rental of ~~tools and drilling equipment~~ drilling platforms and oil well drilling tools in connection with the fields of geothermal resources, water management, and carbon dioxide storage and containment; repair and maintenance of oil and gas drilling equipment and facilities; subterranean well drilling services; ~~rental of tractors used in oil and gas exploration and production;~~ cementing services for oil and gas wells; ~~waste oil collection for recycling;~~ drilling of wells; rental of drilling platforms; installation and maintenance of irrigation systems; installation and repair of irrigation devices, ~~installation and repair;~~ ~~perforating services in connection with the oil and gas industries;~~ rental of equipment oil well drilling tools used in connection with irrigation services and oil and gas exploration and production; oil and gas well drilling services; recovery services, namely, excavation to recover lost instruments and tools in well during oil and gas exploration and production; Well improvement services, namely, hydraulic fracturing of subsurface geologic formations to enhance well production; providing technical advice in the field of oil and gas drilling, namely technical advice on drilling fluids and drilling fluid use and technical advice on data control, products control, and pressure control; mining extraction of lithium.

International Class 039: rental of tractors used in oil and gas exploration and production; waste oil collection for recycling; physical storage of captured carbon dioxide for others.

International Class 040: Oil well prospecting, namely, perforation services; Generating electricity from geothermal energy; gas production services, namely, hydrogen production.

International Class 041: Educational services, namely, conducting classes, seminars, conferences, and workshops in the fields of oil and gas exploration, measurement, detection, and production, geothermal resources, water management, storage and containment of carbon dioxide, and

environmental issues and distribution of course material in connection therewith

International Class 042: Providing information, news and commentary in the fields of oil and gas exploration; technical support services, namely, troubleshooting of computer software problems used in the fields of oil and gas exploration and production; updating of computer software for others; providing technical information updates of computer software used in the fields of oil and gas exploration and production; computer software consultation; consultation services in the fields of selection, testing, implementation and use of computer hardware and software systems for others; providing online information in the fields of computer software used in the fields of oil and gas exploration and production; testing, analysis, and evaluation of oil and gas reserves; ~~oil and gas well drilling services, namely,~~ providing measurements and downhole telemetry while drilling; engineering services in the field of environmental compliance; conducting environmental wellbore survey services studies in the fields of for the oil and gas exploration and production, geothermal resources, water management, storage and containment ~~or~~ carbon dioxide industries; oil and gas well logging, and testing; ~~analysis, inspection, and sampling~~ Oil and gas well inspection services, namely, detection of leaks in oil and gas well casings; performing oil and gas well diagnostics; oil and gas well surveying; surveying of oil-bearing seams; non-medical ultrasound imaging services in connection with oil and gas exploration; conducting magnetic resonance imaging interpretation and analysis for the oil and gas industries; ~~recovery services in the fields of oil and gas exploration and production; to retrieve instruments and tools lost in a well; remedial services in the field of oil and gas production to restore a well to higher production levels;~~ computer modeling services, namely, computer simulation of drilling processes and operation of facilities used in oil and gas exploration and production; ~~engineering modeling and design of drilling processes and operation of facilities used in oil and gas exploration and production~~ Design of seismic acquisition parameters, namely, models or plans for acquiring seismic data in connection with drilling operations; ~~digital solutions in the fields of oil and gas exploration and production for the optimization of production, including cloud-based solutions, software-as-a-service solutions, machine learning, artificial intelligence, and on-premise solutions~~ Software as a service (SAAS) services featuring software for {specify the function of the programs, e.g., for use in database management, for use as a spreadsheet, for word processing, etc. and, if software is content - or field-specific, the field of use}; design of seismic acquisition parameters, namely, models or plans for acquiring seismic data used in connection with oil and gas drilling operations; ~~interpretation and analysis for the petroleum industry in methods and products for interpreting oil and gas well data obtained during the provision of testing services {specify common commercial name of services}~~; ~~providing early production and extended well test facilities and plants~~ Rental of oil well testing facilities for others to allow production of oil and gas while full field development is being planned and permanent facilities are being built; subterranean oil well testing services for use in connection with subterranean oil well drilling operations; engineering services in connection with the selection and use of specialized equipment for subterranean well drilling operations ~~and providing technical advice on drilling fluids and drilling fluid use and technical advice on data control, products control, and pressure control~~; Oil well testing, namely, providing oil well pressure control testing services for others in the oil and gas industries; oil and gas exploration; ~~engineering, consulting, and testing services in connection with engineering and consulting in the field of research and development in the field of geothermal energy, namely,~~ exploring and developing geothermal resources, water management, and carbon dioxide storage and containment; ~~software rental services in connection with~~ Rental of computer software for {indicate function of software, e.g., playing games, editing digital photos,

~~etc.} in the fields of geothermal resources, water management and carbon dioxide storage and containment; carbon capture and storage services; lithium extraction services; geothermal power production and distribution services; and hydrogen production, storage and distribution services~~

International Class 045: Providing an on-line searchable database for business purposes featuring information on regulations in the field of oil and gas exploration and production

Applicant may amend the identification to clarify or limit the goods and/or services, but not to broaden or expand the goods and/or services beyond those in the original application or as acceptably amended. See 37 C.F.R. §2.71(a); TMEP §1402.06. Generally, any deleted goods and/or services may not later be reinserted. See TMEP §1402.07(e).

For assistance with identifying and classifying goods and services in trademark applications, please see the USPTO's online searchable [U.S. Acceptable Identification of Goods and Services Manual](#). See TMEP §1402.04.

Advisory: Multiple Class Application Requirements

The application identifies goods and/or services in more than one international class; therefore, applicant must satisfy all the requirements below for each international class based on Trademark Act Section 1(b):

- (1) **List the goods and/or services by their international class number** in consecutive numerical order, starting with the lowest numbered class.
- (2) **Submit a filing fee for each international class** not covered by the fee(s) already paid (view the [USPTO's current fee schedule](#)). The application identifies goods and/or services that are classified in at least 13 classes; however, applicant submitted a fee(s) sufficient for only 9 class(es). Applicant must either submit the filing fees for the classes not covered by the submitted fees or restrict the application to the number of classes covered by the fees already paid.

See 37 C.F.R. §2.86(a); TMEP §§1403.01, 1403.02(c).

For an overview of the requirements for a Section 1(b) multiple-class application and how to satisfy the requirements online using the Trademark Electronic Application System (TEAS) form, see the [Multiple-class Application webpage](#).

ENTITY CLARIFICATION REQUIRED

Applicant sets forth in the application the legal entity "company" and applicant's address and/or country of organization as Curaçao. The designation "company" (or the abbreviation "co.") or "limited company" is typically an acceptable entity designation in a U.S. application for applicants from Commonwealth countries. See TMEP §803.03(i). However, the applicant has identified an address and/or country of organization that is not a Commonwealth country.

Therefore, applicant must clarify the legal entity in the application. *See* 37 C.F.R. §§2.32(a)(3), 2.61(b); TMEP §803.03(i). Applicant may do so by (1) specifying the entity type that would be the equivalent of a “company” in the United States or (2) providing a description of the nature of the foreign entity that is applying. *See* TMEP §803.03(i).

RESPONDING TO THIS OFFICE ACTION

Response guidelines. For this application to proceed, applicant must explicitly address each refusal and/or requirement in this Office action. For a refusal, applicant may provide written arguments and evidence against the refusal, and may have other response options if specified above. For a requirement, applicant should set forth the changes or statements. Please see “[Responding to Office Actions](#)” and the informational [video “Response to Office Action”](#) for more information and tips on responding.

How to respond. [Click to file a response to this nonfinal Office action.](#)

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RESPONSE GUIDANCE

- **Missing the response deadline to this letter will cause the application to [abandon](#).** The response must be received by the USPTO before midnight **Eastern Time** of the last day of the response period. TEAS maintenance or [unforeseen circumstances](#) could affect an applicant’s ability to timely respond.
- **[Responses signed by an unauthorized party](#)** are not accepted and can **cause the application to [abandon](#)**. If applicant does not have an attorney, the response must be signed by the individual applicant, all joint applicants, or someone with [legal authority to bind a juristic applicant](#). If applicant has an attorney, the response must be signed by the attorney.
- If needed, **find [contact information for the supervisor](#)** of the office or unit listed in the signature block.

(5) WORDS, LETTERS, AND/OR NUMBERS IN STYLIZED FORM

SLB

Mark Punctuated

SLB

Translation

Goods/Services

- IC 007. US 013 019 021 023 031 034 035.G & S: Anti-friction bearings for machines; Bearing brackets for machines; Bearings for transmission shafts, being parts of machines; Bearings, as parts of machines; Engine bearings; Lubrication machines; Machine parts, namely, roll mill bearings; Piston rings; Roller bearings for machines; Shaft bearings for vacuum pumps. FIRST USE: 19951001. FIRST USE IN COMMERCE: 19961220

Mark Drawing Code

(5) WORDS, LETTERS, AND/OR NUMBERS IN STYLIZED FORM

Design Code

Serial Number

87932286

Filing Date

20180522

Current Filing Basis

1A

Original Filing Basis

1A

Publication for Opposition Date

20181016

Registration Number

5643436

Date Registered

20190101

Owner

(REGISTRANT) Triple J LLC LIMITED LIABILITY COMPANY CALIFORNIA 1950 Elkhorn Ct., Unit 120 San Mateo, CALIFORNIA 94403

Priority Date

Disclaimer Statement

Description of Mark

Color is not claimed as a feature of the mark. The mark consists of the stylized wording "SLB".

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Bearing (mechanical)

From Wikipedia, the free encyclopedia

A **bearing** is a machine element that constrains relative motion to only the desired motion, and reduces friction between moving parts. The design of the bearing may, for example, provide for free linear movement of the moving part or for free rotation around a fixed axis; or, it may prevent a motion by controlling the vectors of normal forces that bear on the moving parts. Most bearings facilitate the desired motion by minimizing friction. Bearings are classified broadly according to the type of operation, the motions allowed, or to the directions of the loads (forces) applied to the parts.

Rotary bearings hold rotating components such as shafts or axles within mechanical systems, and transfer axial and radial loads from the source of the load to the structure supporting it. The simplest form of bearing, the *plain bearing*, consists of a shaft rotating in a hole. Lubrication is used to reduce friction. In the *ball bearing* and *roller bearing*, to reduce sliding friction, rolling elements such as rollers or balls with a circular cross-section are located between the races or journals of the bearing assembly. A wide variety of bearing designs exists to allow the demands of the application to be correctly met for maximum efficiency, reliability, durability and performance.

The term "bearing" is derived from the verb "to bear",^[1] a bearing being a machine element that allows one part to bear (i.e., to support) another. The simplest bearings are bearing surfaces, cut or formed into a part, with varying degrees of control over the form, size, roughness, and location of the surface. Other bearings are separate devices installed into a machine or machine part. The most sophisticated bearings for the most demanding applications are very precise components; their manufacture requires some of the highest standards of current technology.



Ball bearing

Contents [hide]

- 1 History
 - 1.1 Industrial era
- 2 Common
- 3 Types
- 4 Motions
- 5 Friction
- 6 Loads
- 7 Speeds
- 8 Play
- 9 Stiffness
- 10 Service life
 - 10.1 L10 life
 - 10.2 External factors
- 11 Mounting
- 12 Maintenance and lubrication
 - 12.1 Packing
 - 12.2 Ring oiler
 - 12.3 Splash lubrication
 - 12.4 Pressure lubrication
 - 12.5 Composite bearings
- 13 Rolling-element bearing outer race fault detection
- 14 See also
- 15 References
- 16 External links

History

The invention of the rolling bearing, in the form of wooden rollers supporting, or bearing, an object being moved is of great antiquity. It may predate the invention of a wheel rotating on a plain bearing.^[*citation needed*]

Though it is often claimed that the Egyptians used roller bearings in the form of tree trunks under sleds,^[*citation needed*] this is modern speculation.^{[*2*][*3*page needed]} The Egyptians' own drawings in the tomb of Djehutihotep show the process of moving massive stone blocks on sledges as using liquid-lubricated runners which would constitute plain bearings.^{[*3*][*3*page needed]} There are also Egyptian drawings of plain bearings used with hand drills.^[4]

Wheeled vehicles using plain bearings emerged between about 5000 BC and 3000 BC.^[*citation needed*]



The earliest recovered example of a rolling element bearing is a wooden ball bearing supporting a rotating table from the remains of the Roman Nemi ships in Lake Nemi, Italy. The wrecks were dated to 40 BC.^{[9][6]}

Leonardo da Vinci incorporated drawings of ball bearings in his design for a helicopter around the year 1500; this is the first recorded use of bearings in an aerospace design. However, Agostino Ramelli is the first to have published sketches of roller and thrust bearings.^[citation needed] An issue with ball and roller bearings is that the balls or rollers rub against each other, causing additional friction. This can be reduced by enclosing each individual ball or roller within a cage. The captured, or caged, ball bearing was originally described by Galileo in the 17th century.^[citation needed]

The first practical caged-roller bearing was invented in the mid-1740s by horologist John Harrison for his H3 marine timekeeper. In this timepiece the caged bearing was only used for a very limited oscillating motion, but later on Harrison applied a similar bearing design with a true rotational movement in a contemporaneous regulator clock.^[citation needed]

Industrial era [edit]

The first patent on ball bearings was awarded to Philip Vaughan, a British inventor and ironmaster in Carmarthen in 1794. His was the first modern ball-bearing design, with the ball running along a groove in the axle assembly.^[7]

Bearings played a pivotal role in the nascent Industrial Revolution, allowing the new industrial machinery to operate efficiently. For example, they were used for holding wheel and axle assemblies to greatly reduce friction compared to prior non-bearing designs.

The first plain and rolling-element bearings were wood, closely followed by bronze. Over their history bearings have been made of many materials, including ceramic, sapphire, glass, steel, bronze, and other metals. More recently, plastic bearings made of nylon, polyoxymethylene, polytetrafluoroethylene, and UHMWPE, among other materials, are also in use today.

Watch makers produce "jeweled" watches using sapphire plain bearings to reduce friction, thus allowing more precise time keeping.

Even basic materials can have impressive durability. Wooden bearings, for instance, can still be seen today in old clocks or in water mills where the water provides cooling and lubrication.

The first patent for a radial style ball bearing was awarded to Jules Surrau, a Pansian bicycle mechanic, on 3 August 1869. The bearings were then fitted to the winning bicycle ridden by James Moore in the world's first bicycle road race, Paris-Rouen, in November 1869.^[8]

In 1883, Friedrich Fischer, founder of FAG, developed an approach for milling and grinding balls of equal size and exact roundness by means of a suitable production machine, which set the stage for creation of an independent bearing industry. His hometown Schweinfurt later became a world leading center for ball bearing production.

The modern, self-aligning design of ball bearing is attributed to Sven Wingquist of the SKF ball-bearing manufacturer in 1907, when he was awarded Swedish patent No. 25406 on its design.

Henry Timken, a 19th-century visionary and innovator in carriage manufacturing, patented the tapered roller bearing in 1898. The following year he formed a company to produce his innovation. Over a century the company grew to make bearings of all types, including specially steel bearings and an array of related products and services.

Erich Franke invented and patented the wire race bearing in 1934. His focus was on a bearing design with a cross section as small as possible and which could be integrated into the enclosing design. After World War II he founded together with Gerhard Heydrich the company Franke & Heydrich KG (today Franke GmbH) to push the development and production of wire race bearings.

Richard Stinbeck's extensive research^{[9][10]} on ball bearing steels identified the metallurgy of the commonly used 100Cr6 (AISI 52100),^[11] showing coefficient of friction as a function of pressure.

Designed in 1968 and later patented in 1972, Bishop-Wisecarver's co-founder Bud Wisecarver created vee groove bearing guide wheels, a type of linear motion bearing consisting of both an external and internal 90-degree vee angle.^{[12]^[*better source needed*]}

In the early 1980s, Pacific Bearing's founder, Robert Schroeder, invented the first bi-material plain bearing that was interchangeable with linear ball bearings. This bearing had a metal shell (aluminum, steel or stainless steel) and a layer of Teflon-based material connected by a thin adhesive layer.^[13]

Today's ball and roller bearings are used in many applications which include a rotating component. Examples include ultra high speed bearings in dental drills, aerospace bearings in the Mars Rover, gearbox and wheel bearings on automobiles, flexure bearings in optical alignment systems, and air bearings used in Coordinate-measuring machines.

Common [edit]

By far, the most common bearing is the plain bearing, a bearing which uses surfaces in rubbing contact, often with a lubricant such as oil or graphite. A plain bearing may or may not be a discrete device. It may be nothing more than the bearing surface of a hole with a shaft passing through it, or of a planar surface that bears another (in these cases, not a discrete device), or it may be a layer of bearing metal either fused to the substrate (semi-discrete) or in the form of a separable sleeve (discrete). With suitable lubrication, plain bearings often give entirely acceptable accuracy, life, and friction at minimal cost. Therefore, they are very widely used.

However, there are many applications where a more suitable bearing can improve efficiency, accuracy, service intervals, reliability, speed of operation, size, weight, and costs of purchasing and operating machinery.

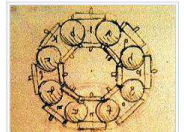
Thus, there are many types of bearings, with varying shape, material, lubrication, principle of operation, and so on.

Types [edit]

There are at least 6 common types of bearing,^[14] each of which operates on a different principle:

- Plain bearing, consisting of a shaft rotating in a hole. There are several specific styles: bushing, journal bearing, sleeve bearing, rifle bearing, composite bearing;
- Rolling-element bearings, whose performance does not depend on avoiding or reducing friction between two surfaces but employ a different principle to achieve low external friction: the rolling motion of an intermediate element in between the surfaces which bears the axial or radial load. Classified as either:
 - Ball bearing, in which the rolling elements are spherical balls;
 - Roller bearing, in which the rolling elements are cylindrical rollers, linearly-tapered (conical) rollers, or rollers with a curved taper (so-called spherical rollers);

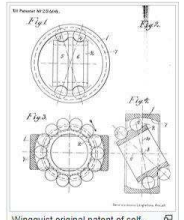
Tapered roller bearing [edit]



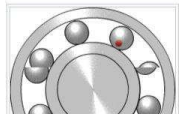
Drawing of Leonardo da Vinci (1452–1519) *Study of a ball bearing* [edit]



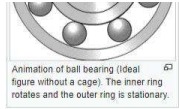
Early Timken tapered roller bearing with notched rollers [edit]



Wingquist original patent of self-aligning ball bearing [edit]



- Jewel bearing, a plain bearing in which one of the bearing surfaces is made of an ultrahard glassy jewel material such as sapphire to reduce friction and wear;
- Fluid bearing, a noncontact bearing in which the load is supported by a gas or liquid (i.e. air bearing);
- Magnetic bearing, in which the load is supported by a magnetic field;
- Flexure bearing, in which the motion is supported by a load element which bends.



Notable characteristics of each of these types of bearing are summarized in the following table.

Type	Description	Friction	Stiffness [†]	Speed	Life	Notes
Plain bearing	Rubbing surfaces, usually with lubricant; some bearings use pumped lubrication and behave similarly to fluid bearings.	Depends on materials and construction. PTFE has a coefficient of friction ~0.05–0.35, depending upon fillers added.	Good, provided wear is low, but some slack is normally present	Low to very high	Low to very high – depends upon application and lubrication	Widely used, relatively high friction, suffers from stiction in some applications. Depending upon the application, the lifetime can be higher or lower than rolling element bearings.
Rolling element bearing	Ball or rollers contact both rotating and stationary surfaces which rotate rather than rub	Rolling coefficient of friction with steel can be ~0.005 (adding resistance due to seals, packed grease, preload and misalignment can increase friction to as much as 0.125)	Good, but some slack is usually present	Moderate to high (often requires cooling)	Moderate to high (depends on lubrication, often requires maintenance)	Used for higher moment loads than plain bearings with lower friction
Jewel bearing	Off-center bearing rolls in seating	Low	Low due to flexing	Low	Adequate (requires maintenance)	Mainly used in low-load, high precision work such as clocks. Jewel bearings may be very small.
Fluid bearing	Fluid is forced between two faces and held in by edge seal	Zero friction at zero speed, low	Very high	Very high (usually limited to a few hundred feet per second at by seal)	Virtually infinite in some applications, may wear at startup/shutdown in some cases. Often negligible maintenance.	Can fail quickly due to grit or dust or other contaminants. Maintenance free in continuous use. Can handle very large loads with low friction.
Magnetic bearing	Faces of bearing are kept separate by magnets (electromagnets or eddy currents)	Zero friction at zero speed, but constant power for levitation, eddy currents are often induced when movement occurs, but may be negligible if magnetic field is quasi-static	Low	No practical limit	Indefinite. Maintenance free. (with electromagnets)	Active magnetic bearings (AMB) need considerable power. Electrodynamic bearings (EDB) do not require external power.
Flexure bearing	Material flexes to give and constrain movement	Very low	Low	Very high.	Very high or low depending on materials and strain in application. Usually maintenance free.	Limited range of movement, no backlash, extremely smooth motion
Composite bearing	Plain bearing shape with PTFE liner on the interface between bearing and shaft with a laminated metal backing. PTFE acts as a lubricant.	PTFE and use of fillers to dial in friction as necessary for friction control.	Good depending on laminated metal backing	Low to very high	Very high; PTFE and fillers ensure wear and corrosion resistance	Widely used, controls friction, reduces stick slip, PTFE reduces static friction

[†]Stiffness is the amount that the gap varies when the load on the bearing changes, it is distinct from the friction of the bearing.

Motions [edit]

Common motions permitted by bearings are:

- Radial rotation e.g. shaft rotation;
- linear motion e.g. drawer;
- spherical rotation e.g. ball and socket joint;
- hinge motion e.g. door, elbow, knee.

Friction [edit]

Reducing friction in bearings is often important for efficiency, to reduce wear and to facilitate extended use at high speeds and to avoid overheating and premature failure of the bearing. Essentially, a bearing can reduce friction by virtue of its shape, by its material, or by introducing and containing a fluid between surfaces or by separating the surfaces with an electromagnetic field.

- **By shape**, gains advantage usually by using spheres or rollers, or by forming flexure bearings.
- **By material**, exploits the nature of the bearing material used. (An example would be using plastics that have low surface friction.)
- **By fluid**, exploits the low viscosity of a layer of fluid, such as a lubricant or as a pressurized medium to keep the two solid parts from touching, or by reducing the normal force between them.

- **By fields**, exploits electromagnetic fields, such as magnetic fields, to keep solid parts from touching.
- **Air pressure** exploits air pressure to keep solid parts from touching.

Combinations of these can even be employed within the same bearing. An example of this is where the cage is made of plastic, and it separates the rollers/balls, which reduce friction by their shape and finish.

Loads [edit]

Bearing design varies depending on the size and directions of the forces that they are required to support. Forces can be predominately radial, axial (thrust bearings), or bending moments perpendicular to the main axis.

Speeds [edit]

Different bearing types have different operating speed limits. Speed is typically specified as maximum relative surface speeds, often specified ft/s or m/s. Rotational bearings typically describe performance in terms of the product *DN* where *D* is the mean diameter (often in mm) of the bearing and *N* is the rotation rate in revolutions per minute.

Generally, there is considerable speed range overlap between bearing types. Plain bearings typically handle only lower speeds, rolling element bearings are faster, followed by fluid bearings and finally magnetic bearings which are limited ultimately by centripetal force overcoming material strength.

Play [edit]

Some applications apply bearing loads from varying directions and accept only limited play or "slop" as the applied load changes. One source of motion is gaps or "play" in the bearing. For example, a 10 mm shaft in a 12 mm hole has 2 mm play.

Allowable play varies greatly depending on the use. As an example, a wheelbarrow wheel supports radial and axial loads. Axial loads may be hundreds of newtons force left or right, and it is typically acceptable for the wheel to wobble by as much as 10 mm under the varying load. In contrast, a lathe may position a cutting tool to ±0.002 mm using a ball lead screw held by rotating bearings. The bearings support axial loads of thousands of newtons in either direction and must hold the ball lead screw to ±0.002 mm across that range of loads

Stiffness [edit]

A second source of motion is elasticity in the bearing itself. For example, the balls in a ball bearing are like stiff rubber, and under load deform from round to a slightly flattened shape. The race is also elastic and develops a slight dent where the ball presses on it.

The stiffness of a bearing is how the distance between the parts which are separated by the bearing varies with applied load. With rolling element bearings this is due to the strain of the ball and race. With fluid bearings it is due to how the pressure of the fluid varies with the gap (when correctly loaded, fluid bearings are typically stiffer than rolling element bearings).

Service life [edit]

Fluid and magnetic bearings

Main articles: Fluid bearing and Magnetic bearing

Fluid and magnetic bearings can have practically indefinite service lives. In practice, there are fluid bearings supporting high loads in hydroelectric plants that have been in nearly continuous service since about 1900 and which show no signs of wear.^[*citation needed*]

Rolling element bearings

Rolling element bearing life is determined by load, temperature, maintenance, lubrication, material defects, contamination, handling, installation and other factors. These factors can all have a significant effect on bearing life. For example, the service life of bearings in one application was extended dramatically by changing how the bearings were stored before installation and use, as vibrations during storage caused lubricant failure even when the only load on the bearing was its own weight.^[15] the resulting damage is often false brinelling.^[16] Bearing life is statistical: several samples of a given bearing will often exhibit a bell curve of service life, with a few samples showing significantly better or worse life. Bearing life varies because microscopic structure and contamination vary greatly even where macroscopically they seem identical.

L10 life [edit]

Bearings are often specified to give an "L10" life (outside the US, it may be referred to as "B10" life.) This is the life at which ten percent of the bearings in that application can be expected to have failed due to classical fatigue failure (and not any other mode of failure like lubrication starvation, wrong mounting etc.), or, alternatively, the life at which ninety percent will still be operating. The L10 life of the bearing is theoretical life and may not represent service life of the bearing. Bearings are also rated using C₀ (static loading) value. This is the basic load rating as a reference, and not an actual load value.

Plain bearings

For plain bearings, some materials give much longer life than others. Some of the John Harrison clocks still operate after hundreds of years because of the *lignum vitae* wood employed in their construction, whereas his metal clocks are seldom run due to potential wear.

Flexure bearings

Flexure bearings rely on elastic properties of a material. Flexure bearings bend a piece of material repeatedly. Some materials fail after repeated bending, even at low loads, but careful material selection and bearing design can make flexure bearing life indefinite.

Short-life bearings

Although long bearing life is often desirable, it is sometimes not necessary. Harris 2001 describes a bearing for a rocket motor oxygen pump that gave several hours life, far in excess of the several tens of minutes life needed.^[15]

Composite bearings

Depending on the customized specifications (backing material and PTFE compounds), composite bearings can operate up to 30 years without maintenance.

Oscillating bearings

For bearings which are used in oscillating applications, customized approaches to calculate L10 are used.^[17]

External factors [edit]

The service life of the bearing is affected by many parameters that are not controlled by the bearing manufacturers. For example, bearing mounting, temperature, exposure to external environment, lubricant cleanliness and electrical currents through bearings etc. High frequency *PWM* inverters can induce currents in a bearing, which can be suppressed by the use of ferrite chokes.

The temperature and terrain of the micro-surface will determine the amount of friction by the touching of solid parts.

Certain elements and fields reduce friction while increasing speeds.

Strength and mobility help determine the amount of load the bearing type can carry.

Alignment factors can play a damaging role in wear and tear, yet overcome by computer aid signaling and non-rubbing bearing types, such as magnetic levitation or air field pressure.

Mounting [edit]

There are many methods of mounting bearings, usually involving an interference fit.^[18] When press fitting or shrink fitting a bearing into a bore or onto a shaft, it's important to keep the housing bore and shaft outer diameter to very close limits, which can involve one or more counterboring operations, several facing operations, and drilling, tapping, and threading operations.^[19] Alternatively, an interference fit can also be achieved with the addition of a tolerance ring.

Maintenance and lubrication [edit]

Many bearings require periodic maintenance to prevent premature failure, but many others require little maintenance. The latter include various kinds of polymer, fluid and magnetic bearings, as well as rolling-element bearings that are described with terms including *sealed bearing* and *sealed for life*. These contain seals to keep the dirt out and the grease in. They work successfully in many applications, providing maintenance-free operation. Some applications cannot use them effectively.

Nonsealed bearings often have a grease fitting, for periodic lubrication with a grease gun, or an oil cup for periodic filling with oil. Before the 1970s, sealed bearings were not encountered on most machinery, and oiling and greasing were a more common activity than they are today. For example, automotive chassis used to require "lube jobs" nearly as often as engine oil changes, but today's car chassis are mostly sealed for life. From the late 1700s through the mid-1900s, industry relied on many workers called oilers to lubricate machinery frequently with oil cans.

Factory machines today usually have *lube systems*, in which a central pump serves periodic charges of oil or grease from a reservoir through *lube lines* to the various *lube points* in the machine's bearing surfaces, bearing journals, pillow blocks, and so on. The timing and number of such *lube cycles* is controlled by the machine's computerized control, such as PLC or CNC, as well as by manual override functions when occasionally needed. This automated process is how all modern CNC machine tools and many other modern factory machines are lubricated. Similar lube systems are also used on nonautomated machines, in which case there is a hand pump that a machine operator is supposed to pump once daily (for machines in constant use) or once weekly. These are called *one-shot systems* from their chief selling point: one pull on one handle to lube the whole machine, instead of a dozen pumps of an atermite gun or oil can in a dozen different positions around the machine.

The oiling system inside a modern automotive or truck engine is similar in concept to the lube systems mentioned above, except that oil is pumped continuously. Much of this oil flows through passages drilled or cast into the engine block and cylinder heads, escaping through ports directly onto bearings, and squirting elsewhere to provide an oil bath. The oil pump simply pumps constantly, and any excess pumped oil continuously escapes through a relief valve back into the sump.

Many bearings in high-cycle industrial operations need periodic lubrication and cleaning, and many require occasional adjustment, such as pre-load adjustment, to minimize the effects of wear.

Bearing life is often much better when the bearing is kept clean and well lubricated. However, many applications make good maintenance difficult. One example is bearings in the conveyor of a rock crusher are exposed continually to hard abrasive particles. Cleaning is of little use because cleaning is expensive yet the bearing is contaminated again as soon as the conveyor resumes operation. Thus, a good maintenance program might lubricate the bearings frequently but not include any disassembly for cleaning. The frequent lubrication, by its nature, provides a limited kind of cleaning action, by displacing older (grit-filled) oil or grease with a fresh charge, which itself collects grit before being displaced by the next cycle. Another example are bearings in wind turbines, which makes maintenance difficult since the nacelle is placed high up in the air in strong wind areas. In addition, the turbine does not always run and is subjected to different operating behavior in different weather conditions, which makes proper lubrication a challenge.^[20]

Packing [edit]

Some bearings use a thick grease for lubrication, which is pushed into the gaps between the bearing surfaces, also known as *packing*. The grease is held in place by a plastic, leather, or rubber gasket (also called a *gland*) that covers the inside and outside edges of the bearing race to keep the grease from escaping.

Bearings may also be packed with other materials. Historically, the wheels on railroad cars used sleeve bearings packed with waste or loose scraps of cotton or wool fiber soaked in oil, then later used solid pads of cotton.^[21]

Ring oiler [edit]

Further information: Ring oiler

Bearings can be lubricated by a metal ring that rides loosely on the central rotating shaft of the bearing. The ring hangs down into a chamber containing lubricating oil. As the bearing rotates, viscous adhesion draws oil up the ring and onto the shaft, where the oil migrates into the bearing to lubricate it. Excess oil is flung off and collects in the pool again.^[22]

Splash lubrication [edit]

A rudimentary form of lubrication is splash lubrication. Some machines contain a pool of lubricant in the bottom, with gears partially immersed in the liquid, or crank rods that can swing down into the pool as the device operates. The spinning wheels fling oil into the air around them, while the crank rods slap at the surface of the oil, splashing it randomly on the interior surfaces of the engine. Some small internal combustion engines specifically contain special plastic *flinger wheels* which randomly scatter oil around the interior of the mechanism.^[23]

Pressure lubrication [edit]

For high speed and high power machines, a loss of lubrication can result in rapid bearing failure and damage due to friction. Also in dirty environments, the oil can become contaminated with dust or debris that increase friction. In these applications, a fresh supply of lubricant

It is high speed and high power machines, a host of problems can occur in high bearing bearing area damage due to friction. This is why lubrication, the oil can reduce the temperature and heat of the bearing, and the oil can be continuously supplied to the bearing and all other contact surfaces, and the excess can be collected for filtration, cooling, and possibly reuse. Pressure oiling is commonly used in large and complex internal combustion engines in parts of the engine where directly splashed oil cannot reach, such as up into overhead valve assemblies.^[24] High speed turbochargers also typically require a pressurized oil system to cool the bearings and keep them from burning up due to the heat from the turbine.

Composite bearings [edit]

Composite bearings are designed with a self-lubricating polytetrafluorethylene (PTFE) liner with a laminated metal backing. The PTFE liner offers consistent, controlled friction as well as durability whilst the metal backing ensures the composite bearing is robust and capable of withstanding high loads and stresses throughout its long life. Its design also makes it lightweight-one tenth the weight of a traditional rolling element bearing.^[25]

Rolling-element bearing outer race fault detection [edit]



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Rolling-element bearings are widely used in the industries today, and hence maintenance of these bearings becomes an important task for the maintenance professionals. The rolling-element bearings wear out easily due to metal-to-metal contact, which creates faults in the outer race, inner race and ball. It is also the most vulnerable component of a machine because it is often under high load and high running speed conditions. Regular diagnostics of rolling-element bearing faults is critical for industrial safety and operations of the machines along with reducing the maintenance costs or avoiding shutdown time. Among the outer race, inner race and ball, the outer race tends to be more vulnerable to faults and defects.

There is still room for discussion as to whether the rolling element excites the natural frequencies of bearing component when it passes the fault on the outer race. Hence we need to identify the bearing outer race natural frequency and its harmonics. The bearing faults create impulses and results in strong harmonics of the fault frequencies in the spectrum of vibration signals. These fault frequencies are sometimes masked by adjacent frequencies in the spectra due to their little energy. Hence, a very high spectral resolution is often needed to identify these frequencies during a FFT analysis. The natural frequencies of a rolling element bearing with the free boundary conditions are 3 kHz^[*debious – discuss*]. Therefore, in order to use the bearing component resonance bandwidth method to detect the bearing fault at an initial stage a high frequency range accelerometer should be adopted, and data obtained from a long duration needs to be acquired. A fault characteristic frequency can only be identified when the fault extent is severe, such as that of the presence of a hole in the outer race. The harmonics of fault frequency is a more sensitive indicator of a bearing outer race fault. For a more serious detection of detected bearing faults waveform, spectrum and envelope techniques will help reveal these faults. However, if a high frequency demodulation is used in the envelope analysis in order to detect bearing fault characteristic frequencies, the maintenance professionals have to be more careful in the analysis because of resonance, as it may or may not contain fault frequency components.

Using spectral analysis as a tool to identify the faults in the bearings faces challenges due to issues like low energy, signal smearing, cyclostationarity etc. High resolution is often desired to differentiate the fault frequency components from the other high-amplitude adjacent frequencies. Hence, when the signal is sampled for FFT analysis, the sample length should be large enough to give adequate frequency resolution in the spectrum. Also, keeping the computation time and memory within limits^[*debious – discuss*] and avoiding unwanted aliasing may be demanding. However, a minimal frequency resolution required can be obtained by estimating the bearing fault frequencies and other vibration frequency components and its harmonics due to shaft speed, misalignment, line frequency, gearbox etc.

See also [edit]

- Axlebox
- Ball bearing – Type of rolling-element bearing
- Ball spline – Type of linear motion bearing that can transmit torque
- Bridge bearing
- Contact mechanics – Study of the deformation of solids that touch each other
- Journal bearing – Simplest type of bearing, comprising just a bearing surface and no rolling elements
- Hinge – Mechanical bearing connecting two objects
- Main bearing
- Needle roller bearing – Type of roller bearing which uses long, thin cylinders as rollers
- Pillow block bearing – Bracket used to provide support to rotating shafts
- Pitch bearing – Component connecting a turbine blade to the hub allowing pitch variation
- Plain bearing – Simplest type of bearing, comprising just a bearing surface and no rolling elements
- Pot bearing
- Race (bearing) – Track in a bearing along which the rolling elements ride
- Rolamite – Low friction bearing technology
- Rolling-element bearing – Bearing which carries a load with rolling elements placed between two grooved rings
- Scrollerwheel
- Shock pulse method
- Slewing bearing – Rotational support element for directional alignment
- Spherical plain bearing – Bearing that allow limited angular rotation orthogonal to the shaft axis
- Spherical roller bearing – Rolling-element bearing that tolerates angular misalignment
- Spiral groove bearing – Hydrodynamic bearings using spiral grooves to develop lubricant pressure

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External links

- ISO Dimensional system and bearing numbers ^l
- Comprehensive review on bearings, University of Cambridge ^l
- A glossary of bearing terms ^l
- How bearings work ^l
- Kinematic Models for Design Digital Library (KMDDL) ^l – Movies and photos of hundreds of working mechanical-systems models at Cornell University. Also includes an e-book library ^l of classic texts on mechanical design and engineering.
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97596686

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