

100 Documents

Publication numbers	Title	Current assignees
WO9013744 A1	Method and apparatus for pumping a fluid from a well	ACTUTECH PUMPING SYSTEMS
US4306463 A	Long stroke pump jack	KING GERALD R
EP--83366 A1	Moving mass pump jack and method of operation.	SANFORD JENNINGS
US4572012 A	Portable walking beam pump jack	LANEY ROY N
WO201630727 A1	Mobilized tail bearing pumpjack	GARY MASON, ...
US20060060011 A1	Pumping unit with variable work stroke and return stroke torque factor characteristics	JENSEN INTERNATIONAL
US4438628 A	Pump jack drive apparatus	CREAMER REGINALD D
US6015271 A	Stowable walking beam pumping unit	LUFKIN INDUSTRIES
WO201927614 A1	Beam pumping unit with geometry optimized for bearing stress reduction	LUFKIN
US4454778 A	Pump jack system for oil well	BAYLESS ALVIN E, ...
US4743172 A	Belt driven pumping unit	GROOVES & LANDS
US4534168 A	Pump jack	BRANTLY NEWBY O
CA1193345 A	Pump jack control apparatus	CREAMER REGINALD D
US6386322 B1	Method and apparatus for oil well pumping	BALDOR ELECTRIC
WO2015117065 A1	System and method of monitoring and optimizing the performance of a well pumping system	MTS SYSTEM
WO2018136979 A2	Rear leg connection for beam pumping unit	LUFKIN
US5829958 A	Pumping unit with speed reducing means	BEAUTECH
US5105671 A	Well pumping unit with adjustable balance beam	SLATER FRANK W
WO2017197321 A1	Beam pumping unit and method of operation	GENERAL ELECTRIC
US4501119 A	Pump jack	NUJACK OIL PUMP
EP2209994 A1	Cranked rod pump apparatus and method	UNICO
DE3148563 A1	"DRIVE FOR CONVEYING PUMP"	CREAMER REGINALD D
WO201905850 A1	Integral precast foundation base for pumping unit	GENERAL ELECTRIC
US20010052704 A1	Turbogenerator power control system	CAPSTONE TURBINE
US4406122 A	Hydraulic oil well pumping apparatus	MCDUFFIE THOMAS F
US4377092 A	Well pump jack with controlled counterbalancing	OIL CAT
EP2035702 A2	Linear rod pump apparatus and method	UNICO
US20020030364 A1	Turbogenerator power control system	CAPSTONE TURBINE
WO201974994 A1	Linear drive beam pumping unit	LUFKIN
US5316085 A	Environmental recovery system	EXXONMOBIL RESEARCH & ENGINEERING

Publication numbers	Title	Current assignees
US20010021347 A1	Pumpjack dynamometer and method	DJAX
US4723452 A	Belt driven pumping unit	GROOVES & LANDS
US6325142 B1	Turbogenerator power control system	CAPSTONE TURBINE
WO2018140795 A1	Load shedding control system for pumps	BAKER HUGHES
WO201826706 A1	Method of determining pump fill and adjusting speed of a rod pumping system	SCHNEIDER ELECTRIC SYSTEMS CANADA
US4502343 A	Pump jack	DINGFELDER ALAN
US20130151216 A1	Method and system for optimizing downhole fluid production	AMBYINT
US6031294 A	Turbogenerator/motor controller with ancillary energy storage/discharge	CAPSTONE TURBINE
CA2227707 A1	Control apparatus for a pump	BORLE DEL
WO200741823 A1	Method and system for optimizing downhole fluid production	PUMPWELL SOLUTIONS
WO2016107593 A1	Digitized automatically controlled oil-pumping method and balance-shifting digitized pumpjack	XINJIANG UYGUR AUTONOMOUS REGION NO 3 MACHINE TOOL WORKS
EP2917472 A1	Apparatus and method of referencing a sucker rod pump	UNICO
EP2971771 A1	Winched rod pump apparatus and method	UNICO
WO2017100669 A1	Controller for a rod pumping unit and method of operation	GENERAL ELECTRIC
CA2580293 A1	Pumping device for oil well	TIANJIN RING TOP PETROLEUM MAN
US4492126 A	Variable leverage oil field pump jack	DAVIS C ARTHUR
US4461187 A	Pump jack	NUJACK OIL PUMP
US4354397 A	Sucker rod shock absorber	FIX PAUL W
US6655224 B1	Downward offset barbell type walking beam compositively balance oil pump	NO 3 MACHINE TOOL PLANT OF THE XINJIANG
US4321837 A	Auxiliary counter balance for well pump	GRIGSBY ROY E
WO201953513 A1	Oil-well pump instrumentation device and surface card generation method	4III INNOVATIONS
US4381695 A	Hydraulically operated pump jack with holding valves and control assembly	KOPCYNski WINK H ADA
US20170037845 A1	Controller and method of controlling a rod pumping unit	GENERAL ELECTRIC
US4121471 A	Rotating horsehead for oilfield pumping unit	CHANCELLOR FORREST E
US5409356 A	Well pumping system with linear induction motor device	MASSIE; LEWIS E.
US20170268500 A1	Controller and method of controlling a rod pumping unit	GENERAL ELECTRIC
US4238966 A	Belt drive for pump jack	CARLSON RUSSELL R, ...
US4727760 A	Connection between the equalizer beam and the walking beam of a walking beam type oil well pumping unit	LUFKIN INDUSTRIES
US20160265321 A1	Well Pumping System Having Pump Speed Optimization	ENCLINE ARTIFICIAL LIFT

Publication numbers	Title	Current assignees
		TECHNOLOGY
US3789679 A	Pumping unit safety guard	WESTBROOK V
US4601640 A	Oil well pump	PETROLEUM RECOVERY SYSTEMS
US3867846 A	High slip prime mover for pumpjack apparatus	VANCE INDUSTRY
GB201612688 D0	Penman (recirculating hydro / fluid) electric power plant (PEPP)	PENMAN DAVID
WO201936312 A1	Integrated base assembly for beam pumping unit	LUFKIN
EP2603763 A1	Beam pumping unit for inclined wellhead	LUFKIN
CA2954193 A1	Method and system for controlling stroke length and stroke speed in a conventional pump jack	HASELOH PETER G
US4493613 A	Oil well pump drive	PETROLEUM RECOVERY SYSTEMS
EP3362686 A1	Tandem motor linear rod pump	UNICO
US4363605 A	Apparatus for generating an electrical signal which is proportional to the tension in a bridle	MILLS MANUEL D
US20170363079 A1	Integrated wireless data system and method for pump control	TECAT PERFORMANCE SYSTEMS
US4681515 A	Walking beam pump having adjustable crank pin	ALLEN JAMES C
EP3129655 A1	Method and apparatus to determine production of downhole pumps	BRISTOL COMPANY
FR2749367 A1	Unidirectional low speed drive transmission for water pump	SORELEC
EP3390774 A1	Methods and apparatus to calibrate rod pump controllers	BRISTOL COMPANY
EP3164601 A2	Methods and apparatus to determine parameters of a pumping unit for use with wells	BRISTOL COMPANY
US20170002805 A1	Electric motor control for pumpjack pumping	POWERUP NES
EP2771541 A2	Calculating downhole cards in deviated wells	WEATHERFORD TECHNOLOGY HOLDINGS
CN102155186 A	Lever system for pumping unit	LÜ CHUANQING
CA1220979 A	Pump jack	BRANTLY NEWBY O
CN201934076U U	Lever system of oil pump	LÜ CHUANQING
US20100170353 A1	Pumping unit	NEW RIVER EQUIPMENT CANTON OH
US20150040692 A1	Swiveling joint for a horse head on a pump jack	IBY OUTLET
US5204595 A	Method and apparatus for controlling a walking beam pump	MAGNETEK, ...
US4631954 A	Apparatus for controlling a pumpjack prime mover	MILLS MANUEL D
EP3164600 A1	Methods and apparatus to determine operating parameters of a pumping unit for use with wells	BRISTOL COMPANY
WO2012158335 A2	Energy saving system and method for devices with rotating	POWERWISE

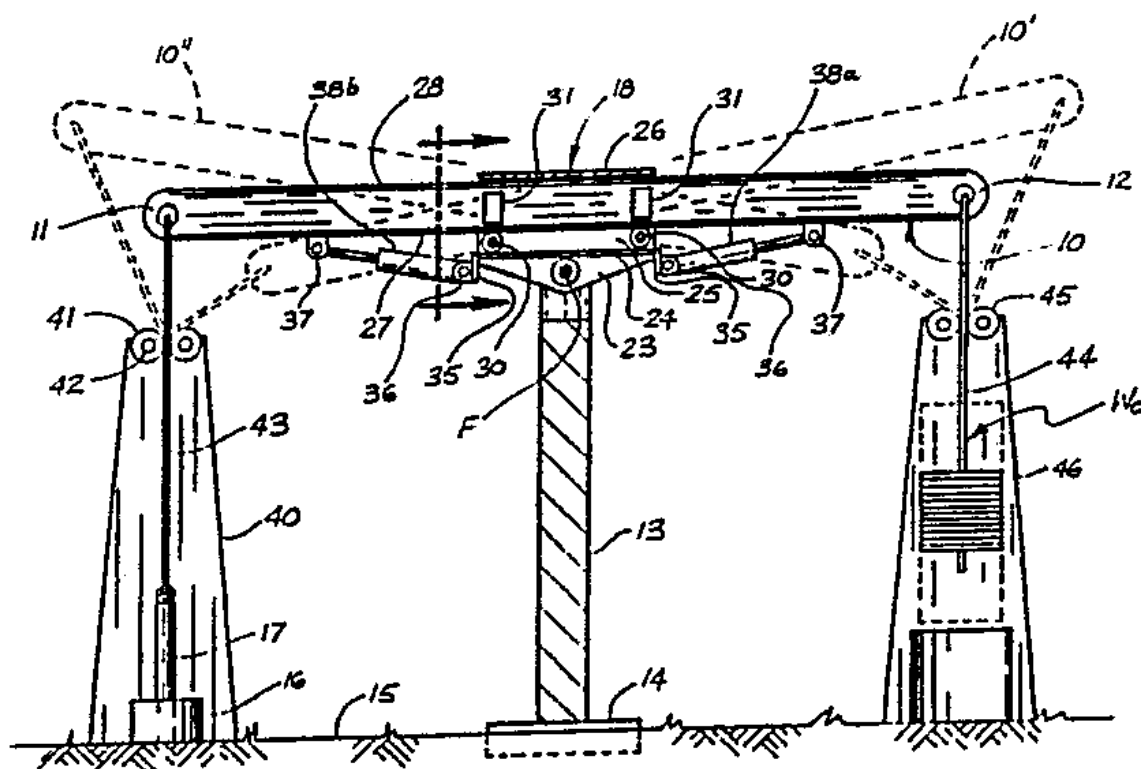
Publication numbers	Title	Current assignees
	or reciprocating masses	
WO200348578 A1	Rod saver speed control method and apparatus	ABB
US4529364 A	Casing gas pump	SCHAEFER LARRY
US20150000930 A1	Pump jack assembly	G E T HYDRAULICS
US5027666 A	Compact counter balanced pump jack	CONOCO
US4715240 A	Pumping device	BETHEL GEORGE F, ...
US4603592 A	Off-vertical pumping unit	LEGRAND INDUSTRIES
AU2013207648 A1	Cranked rod pump apparatus and method	UNICO
US20160102542 A1	Systems and methods for real-time monitoring of downhole pump conditions	HENRY RESEARCH & DEVELOPMENT
WO9321442 A1	Well pump control system	MC TECHNOLOGY
US4474002 A	Hydraulic drive pump apparatus	PERRY L F
US20170002635 A1	Intra-stroke cycle timing for pumpjack fluid pumping	POWERUP NES
CA2836596 A1	Linear rod pump apparatus and method	UNICO
WO200909983 A1	A balance type oil beam-pumping unit	JIN CHENGQUN
US5404767 A	Oil well pump power unit	SUTHERLAND; JAMES M.

Family 1/100 - FAMPAT - ©Questel

Title

(WO9013744)

Method and apparatus for pumping a fluid from a well

Images**Publication numbers with kind code & date**

AU5551590	A	1990-11-29	AU9055515
WO90/13744	A1	1990-11-15	WO9013744

**Abstract**

(WO90/13744)

A method and apparatus for pumping fluids from a well using a walking beam (10) which is connected to the pump rod (17) at one end (11) located above the well and which carries a counterweight (Wc) at the opposite balancing end (12), the walking beam (10) being pivotally supported on a fulcrum (F) disposed between the ends of the beam. The fulcrum (F) and walking beam (10) are associated in a manner to permit relative shifting in the longitudinal direction of the walking beam (10). An actuating mechanism is provided to cause the shifting alternately in opposite directions. As the shifting of the walking beam (10) relative to the fulcrum (F) takes place in a first direction towards the balancing end, the walking beam (10) moved past a loaded balanced condition, i.e. a position in which the turning force caused by the balancing end is equal to the turning force of the pumping rod (17) and head of liquid in the well, and having passed the loaded balance condition, the balancing end thus swings downwardly so as to provide the lifting stroke of the pump. The actuating mechanism then shifts the walking beam (10) relative to the fulcrum (F) in the opposite direction past an unloaded balanced condition, i.e. a position in which the turning force caused by the weight of the pumping rod (17) is equal to the turning force caused by the balancing end of the walking beam (10), and having passed the unloaded balanced condition, the pump rod (17) moves to its lowered position and thereby effects raising of the balancing end to its raised position. The shifting of the balanced beam (10) relative to the fulcrum (F) in the first direction as described above is then repeated as the first complete pumping cycle has been completed. The pumping cycle makes efficient use of the energy input which may be manual or some other conventional power source such as an electric motor. Even when a manual input is used, the pump can be utilized in a deep well situation. High peak loading is avoided which allows the use of lighter structural and driving parts normally used in pump jacks of the walking beam type. Moreover, the operating parts may be of a simple nature so as to be serviceable in geographical areas where skilled technicians and precision tools are not available.

Inventors

HARDAGE ROGER

Latest standardized assignees - inventors removed

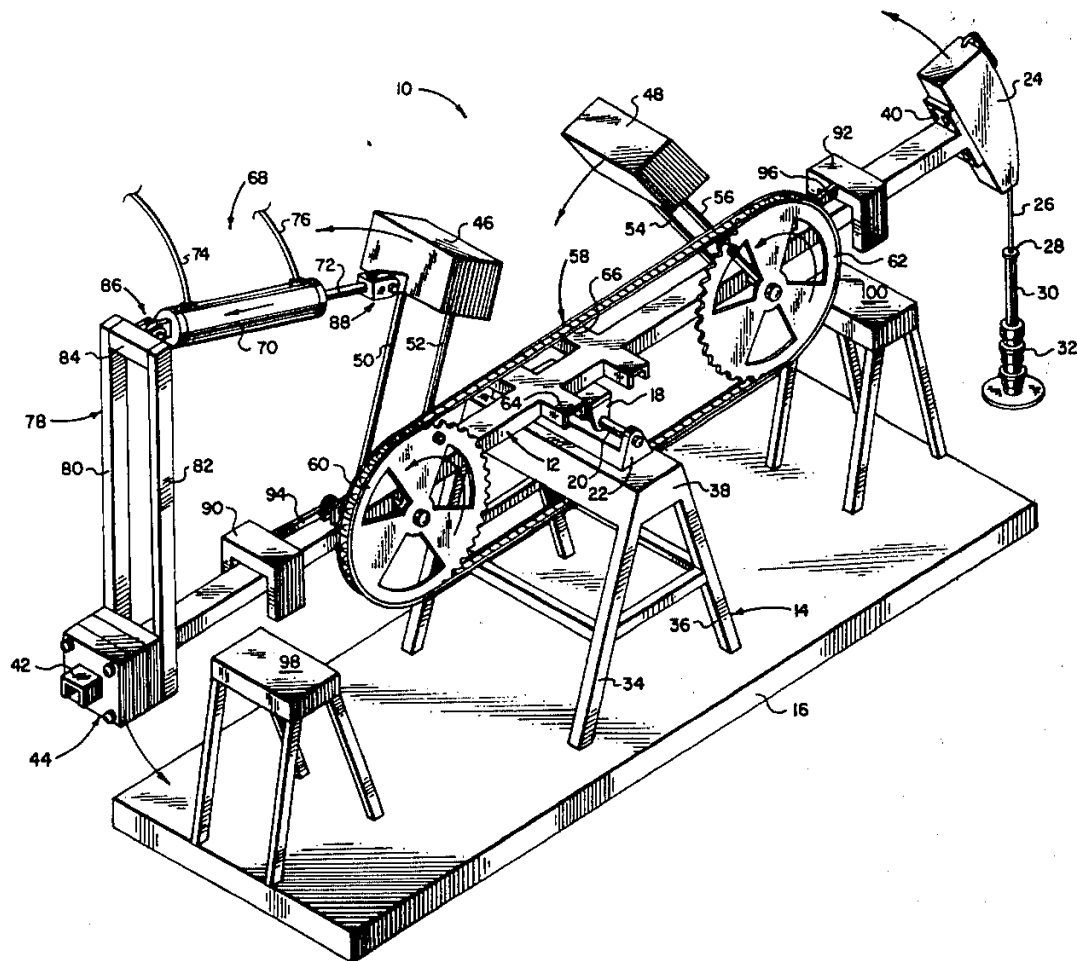
ACTUTECH PUMPING SYSTEMS

Family 2/100 - FAMPAT - ©Questel

Title

(US4306463)

Long stroke pump jack

Images**Publication numbers with kind code & date**[US4306463](#)

A 1981-12-22 US4306463

**Abstract**

(US4306463)

An improved pump jack assembly for reciprocating a sucker rod in a well bore is disclosed. The pump jack assembly includes a walking beam pivotally mounted for free swinging motion on a Sampson post. The walking beam includes a fixed counterweight mounted on one end and a horsehead mounted on the opposite end. The walking beam is driven in up-and-down pumping motion by a pair of balance weights which are coupled for coordinated reciprocal movement along the walking beam. The balance weights are linked together for concurrent movement and are driven by a hydraulic cylinder mounted on the counterweight end of the walking beam. The weights are so positioned that while one weight is being raised by the hydraulic cylinder, the other weight is falling due to gravity. Thus the weights help each other and greatly reduce the power requirement. The downward stroke of each end of the walking beam is limited by saddle weights which are pivotally coupled to the walking beam on opposite sides of the Sampson post. A pedestal disposed in the path of movement of each saddle weight engages the saddle weight and limits its downward movement as the walking beam nears

the limit of its downward stroke.

Inventors

KING GERALD R

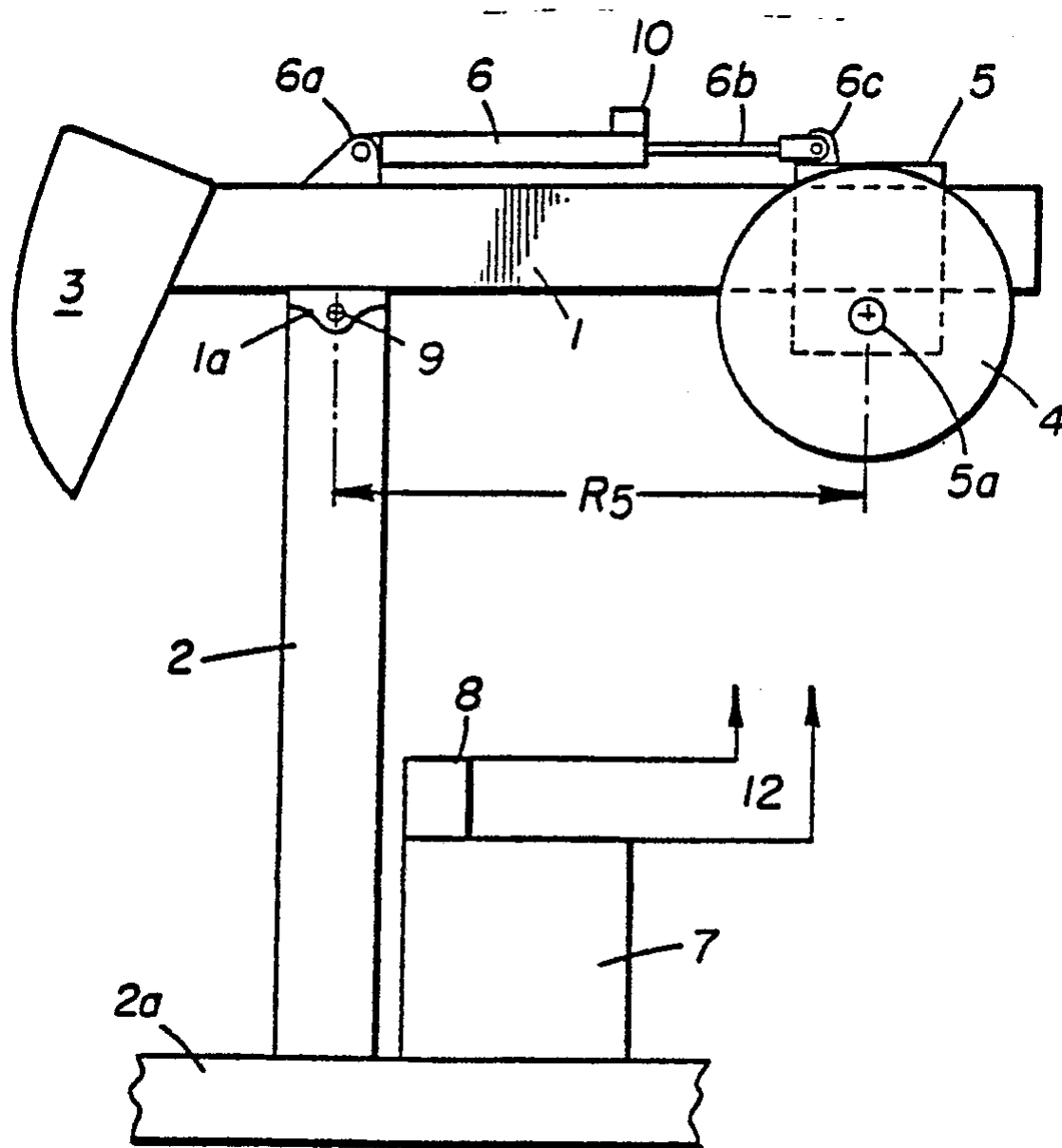
Family 3/100 - FAMPAT - ©Questel

Title

(EP--83366)

Moving mass pump jack and method of operation.

Images



Publication numbers with kind code & date

EP0083366	A4	1984-07-06	EP--83366
EP0083366	A1	1983-07-13	EP--83366
AU8761482	A	1983-02-02	AU8287614
WO83/00203	A1	1983-01-20	WO8300203



Abstract

(EP0083366)

A well pump includes a Sampson post (2) supporting a walking beam (1) which oscillates to cause a horsehead (3) to

operate one or more sucker rods in a well bore. The invention avoids need for a flywheel, gearbox or other mechanical means connected to the base to cause or control oscillating motion of the walking beam. A carriage (5) movably supports a balance mass (4) on the walking beam and is positioned by a hydraulic cylinder (6) or other positioning means to change the relative position of the balance mass, thus causing oscillation of the walking beam. A moving mass control system (11-21) regulates the positioner means and the stroke timing thereof so that a wide range of variable operating conditions can be instituted. One embodiment includes a walking beam (1') adapted for connection at its ends with sucker rods (53a, 53b) in different well bores.

Inventors

BASOLO DOMENITH CLARENCE

Latest standardized assignees - inventors removed

SANFORD JENNINGS

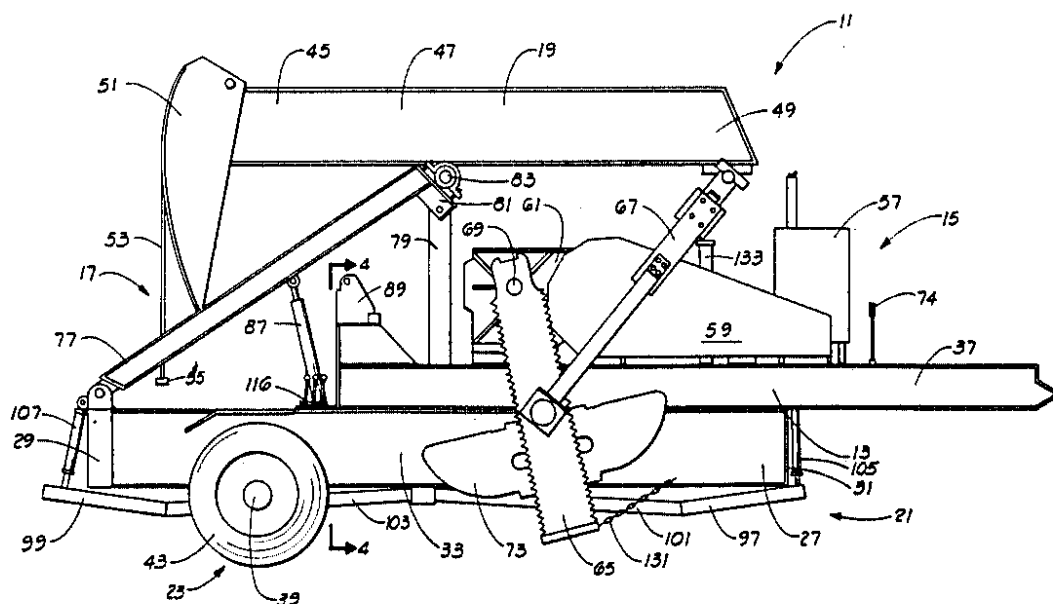
Family 4/100 - FAMPAT - ©Questel

Title

(US4572012)

Portable walking beam pump jack

Images



Publication numbers with kind code & date

US4788873	A	1988-12-06	US4788873
US4572012	A	1986-02-25	US4572012



Abstract

(US4572012)

A portable walking beam pump jack for use in pumping liquids from an oil well having an elongated frame and an axle with wheels thereon mounted transversely on the frame for providing rolling transportation. Stabilizer pads are provided for securing the frame with respect to a ground location, after transportation. An engine is mounted on the frame and rotates a counterweighted pair of arms which are journaled for rotation adjacent to the frame and parallel to the longitudinal axis of the frame. A drive yoke is connected between the counterweighted arms and a walking beam such that rotation of the arms drives the walking beam in a rocking motion. A foldable support assembly is mounted upon the frame and supports the walking beam. The walking beam can be connected to a sucker rod for pumping from a well. The support assembly is foldable from a first, fixed position in which the walking beam is raised for rocking in a pumping motion to a second, fixed position in which the walking beam is held in a lowered position for transportation. Preferably raising and lowering the support assembly is achieved by means of a hydraulic cylinder which extends from the frame to the support assembly.

Inventors

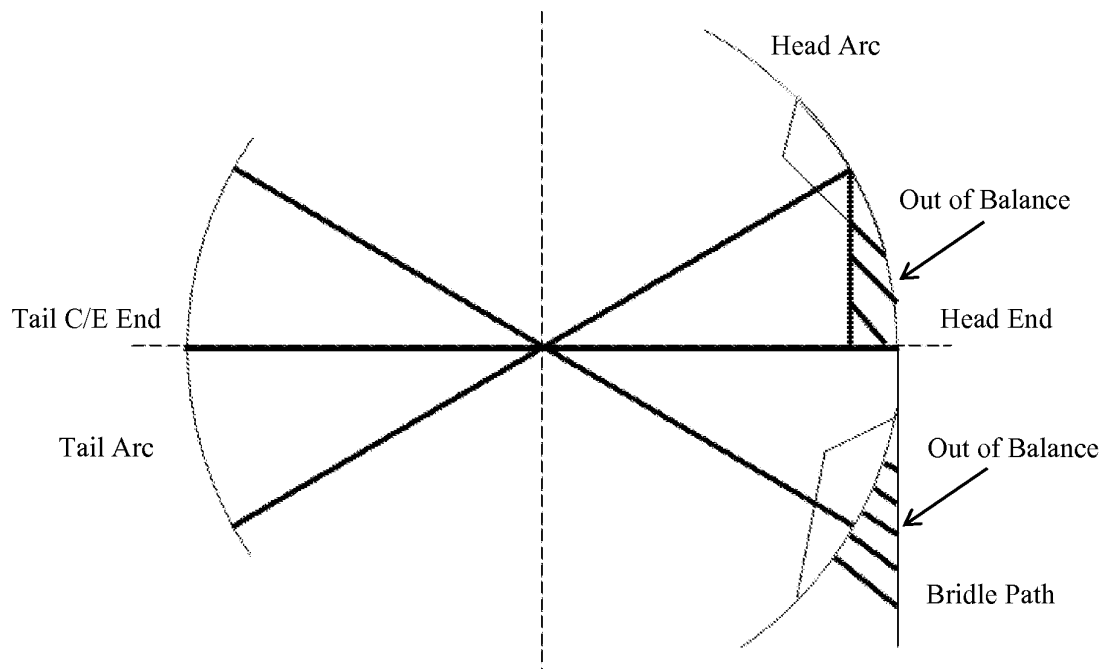
LANEY ROY N

Family 5/100 - FAMPAT - ©Questel

Title

(WO201630727)

Mobilized tail bearing pumpjack

Images**Publication numbers with kind code & date**

US20170226832	A1	2017-08-10	US20170226832
CA2896907	C	2017-04-18	CA2896907
MX2016012671	A	2016-12-14	MX2016012671
WO2016/030727	A1	2016-03-03	WO201630727
CA2896907	A1	2015-10-07	CA2896907

**Abstract**

(WO2016/030727)

A pumpjack includes a walking beam pivotally connected to a vertical support for oscillation in a generally vertical plane about a first axis. A first end of the walking beam is connected to a sucker rod string. A carriage is movably mounted to the walking beam to move back-and-forth along a length of a tail end of the walking beam. A pitman arm has a first end pivotally connected to the carriage for rotation about a second axis and a second end pivotally connected to a crank arm. A counterweight is mounted to the crank arm and a hydraulic ram is connected to the carriage to move the carriage back-and-forth along the walking beam and establish reciprocation of the sucker rod string.

Inventors

MASON GARY

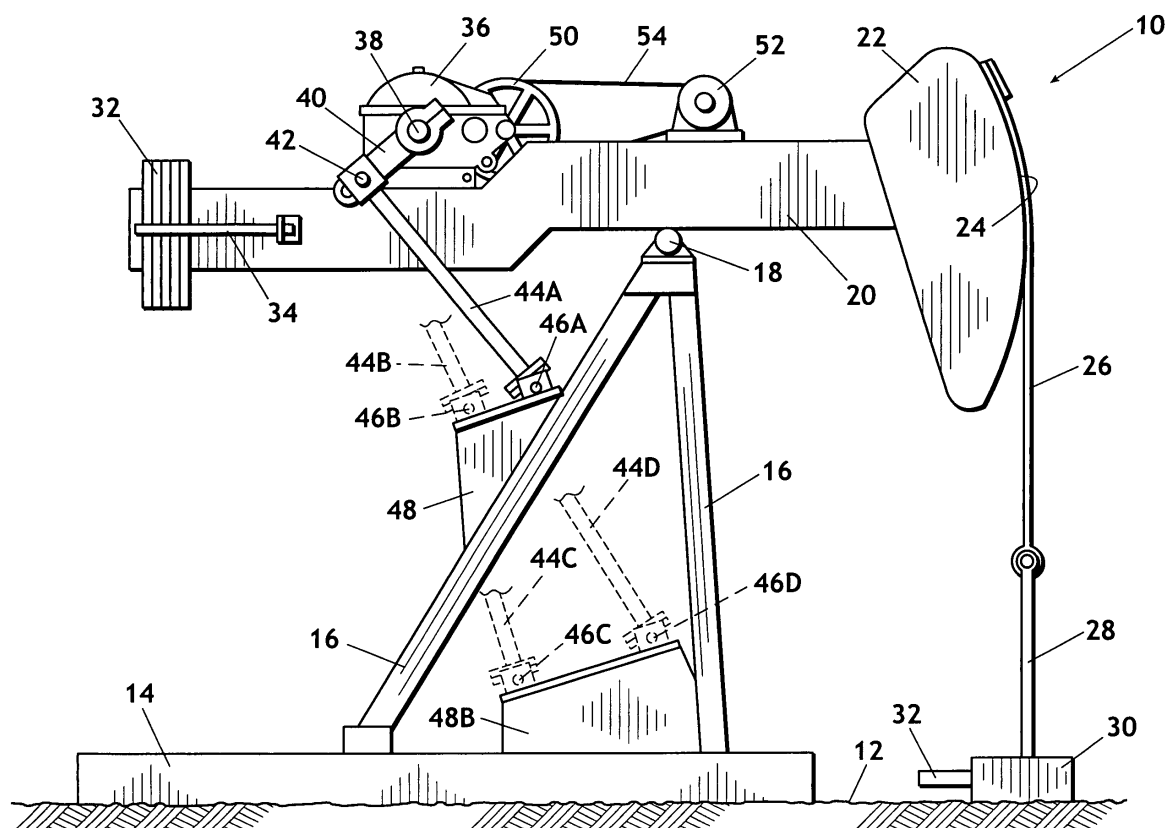
Family 6/100 - FAMPAT - ©Questel

Title

(US7406887)

Pumping unit with variable work stroke and return stroke torque factor characteristics

Images



Publication numbers with kind code & date

CA2520260	C	2013-01-22	CA2520260
US7406887	B2	2008-08-05	US7406887
MXPA05010154	A	2006-03-27	MX2005PA010154
CA2520260	A1	2006-03-23	CA2520260
US20060060011	A1	2006-03-23	US20060060011



Abstract

(US20060060011)

A pumping unit system having vertical sampson post, a walking beam pivotally supported at the upper end of the sampson post and a horsehead affixed at a forward end thereof that supports a reciprocated sucker rod string, including a gear reducer mounted at selectable positions on the walking beam and having a horizontally extending drive shaft, a crank arm affixed to the drive shaft the spacing between a selectable length pitman rod having a first end secured to said crank arm and a second end having a pitman bearing that is selectably mountable to a plurality of pitman bearing locations and a prime mover connected to the gear reducer and wherein the characteristics of the pumping unit are determined by the selectable position of the gear reducer, the selectable length of the crank arm, the selectable length of the pitman rod, and the selectable pitman bearing location.

Inventors

JENSEN JAMES B

Latest standardized assignees - inventors removed

JENSEN INTERNATIONAL

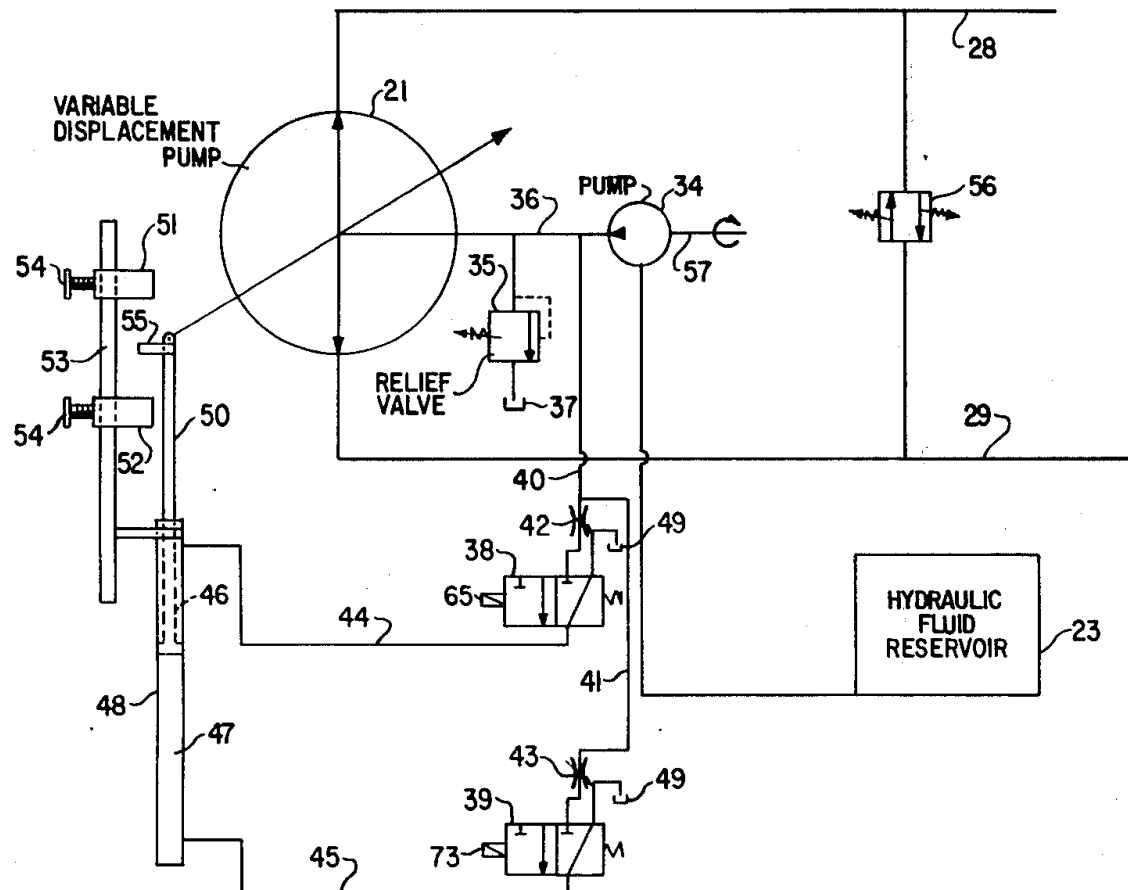
Family 7/100 - FAMPAT - ©Questel

Title

(US4438628)

Pump jack drive apparatus

Images



Publication numbers with kind code & date

[US4438628](#)

A 1984-03-27 US4438628



Abstract

(US4438628)

A pump jack drive apparatus includes a pair of hydraulic cylinders connected to a walking beam of the pump jack for reciprocating the horsehead, and a pair of microswitches or proximity switches which are closed by the walking beam at the limits of the stroke thereof for controlling such stroke. The cylinders are driven and controlled by a pump and control unit which includes a valve for feeding hydraulic fluid to one or the other of the hydraulic cylinders, a control cylinder for controlling the valve, and two solenoid operated control valves for controlling movement of the control cylinder in response to closing of the switches by the walking beam.

Inventors

CREAMER REGINALD D

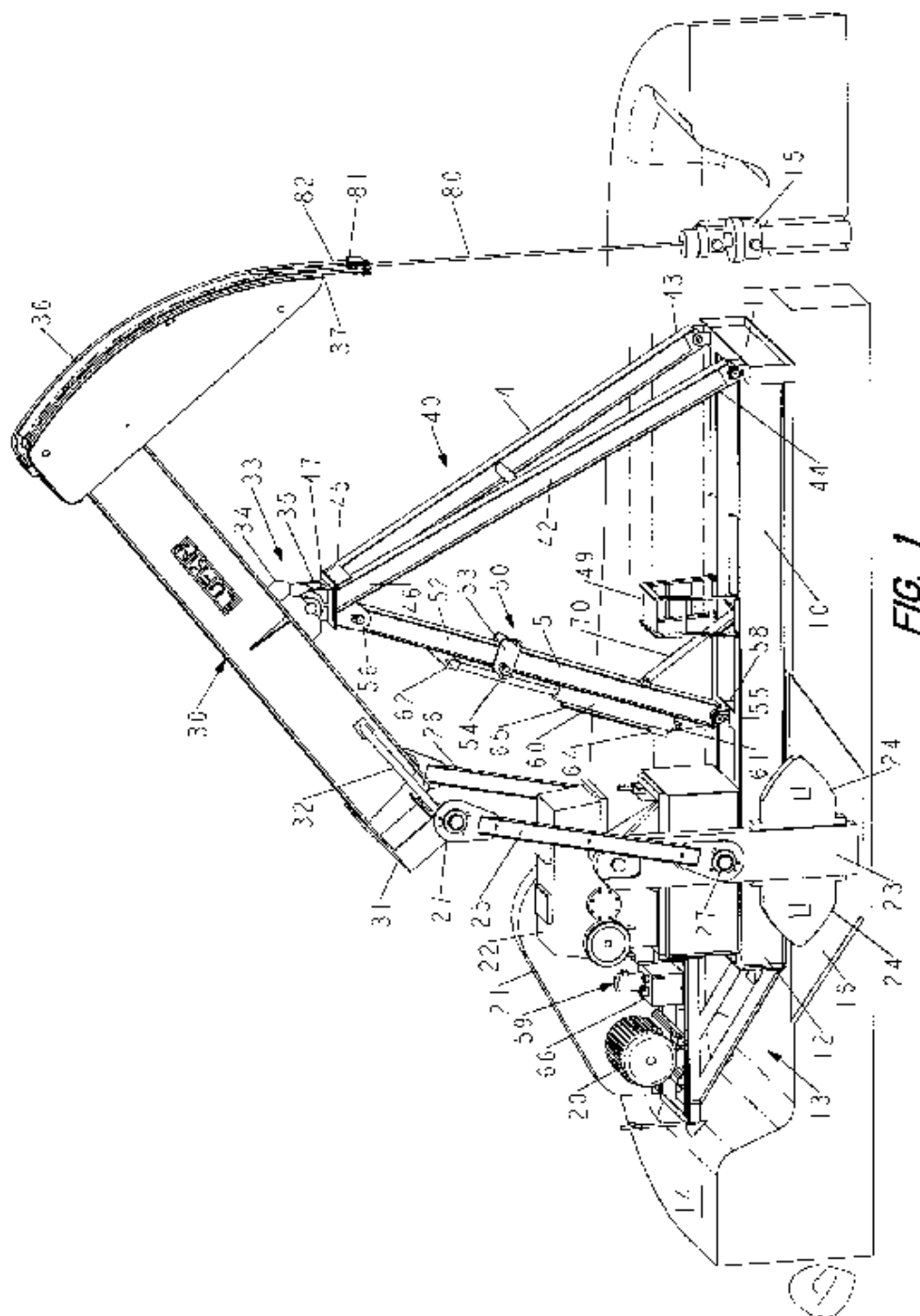
Family 8/100 - FAMPAT - ©Questel

Title

(US6015271)

Stowable walking beam pumping unit

Images



Publication numbers with kind code & date

CA2282214	C	2000-12-05	CA2282214
CA2282214	A1	2000-04-14	CA2282214
US6015271	A	2000-01-18	US6015271



Abstract

(US6015271)

An improved beam pumping unit for pumping fluids from a well having a foldable support structure to allow storage of the pumping unit in a low profile position. The beam pumping unit utilizes a walking beam pivoted on a central bearing, a drive means connected to one end of the walking beam to oscillate the walking beam and a horsehead at the other end of the walking beam for connection to the polished rod of the downhole pump. A foldable Samson post supports the central bearing of the walking beam. The foldable Samson post allows lowering of the pumping unit from a first, fixed standing

position in which the walking beam is raised for normal pumping operation and a second, fixed lowered position for storage.

Inventors

BOYER LEMOYNE

JONES ROBERT MILER

Latest standardized assignees - inventors removed

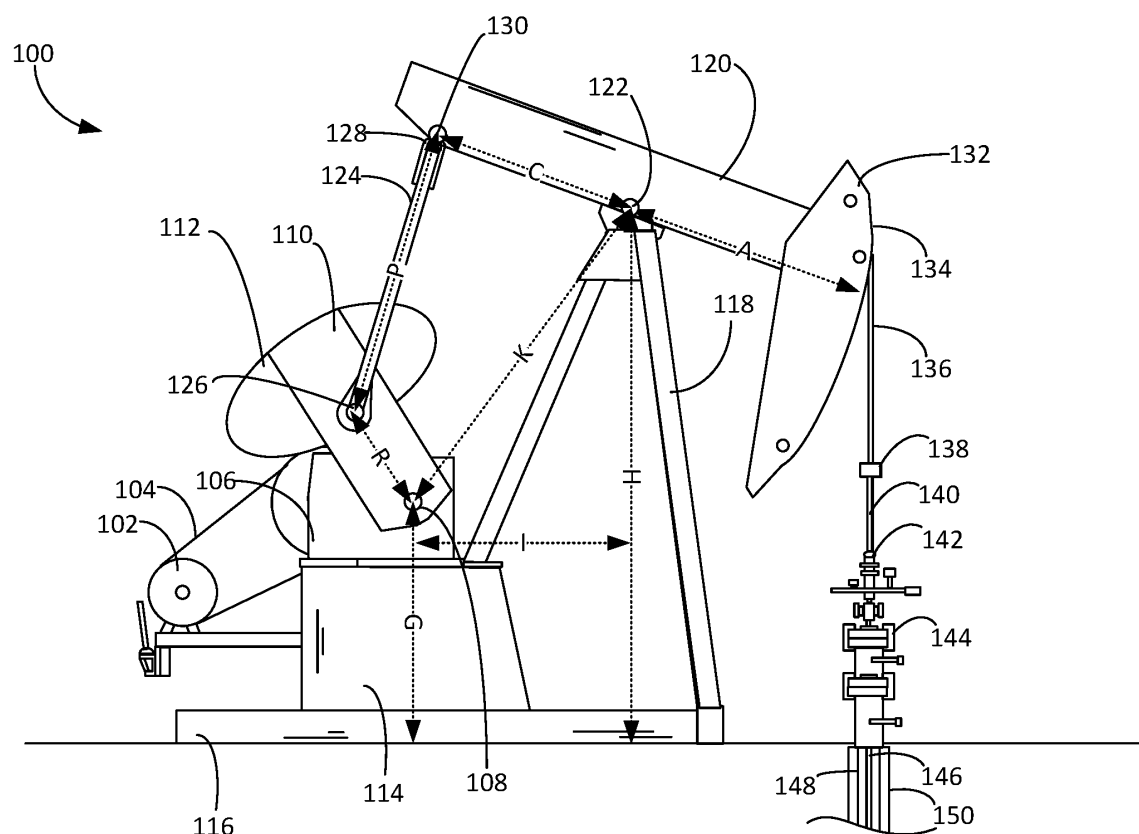
LUFKIN INDUSTRIES

Family 9/100 - FAMPAT - ©Questel

Title

(WO201927614)

Beam pumping unit with geometry optimized for bearing stress reduction

Images**Publication numbers with kind code & date**[US20190040857](#) A1 2019-02-07 [US20190040857](#)[WO2019/027614](#) A1 2019-02-07 [WO201927614](#)**Abstract**

(WO2019/027614)

A pump jack includes a number of standard components that have been sized and configured according to unique relative dimensions to produce a pump jack that reduces structural stress, increases bearing life and permits a lower cost of manufacture. These geometric ratios can be used to express the relative size and spacing of the crankshaft, crank arms, center bearing, equalizer bearing, walking beam and pitman arms. Pump jacks incorporating one or more of these geometric ratios can be sized and scaled for a variety of pumping applications.

Inventors

VALENTINE GARNETT W

Latest standardized assignees - inventors removed

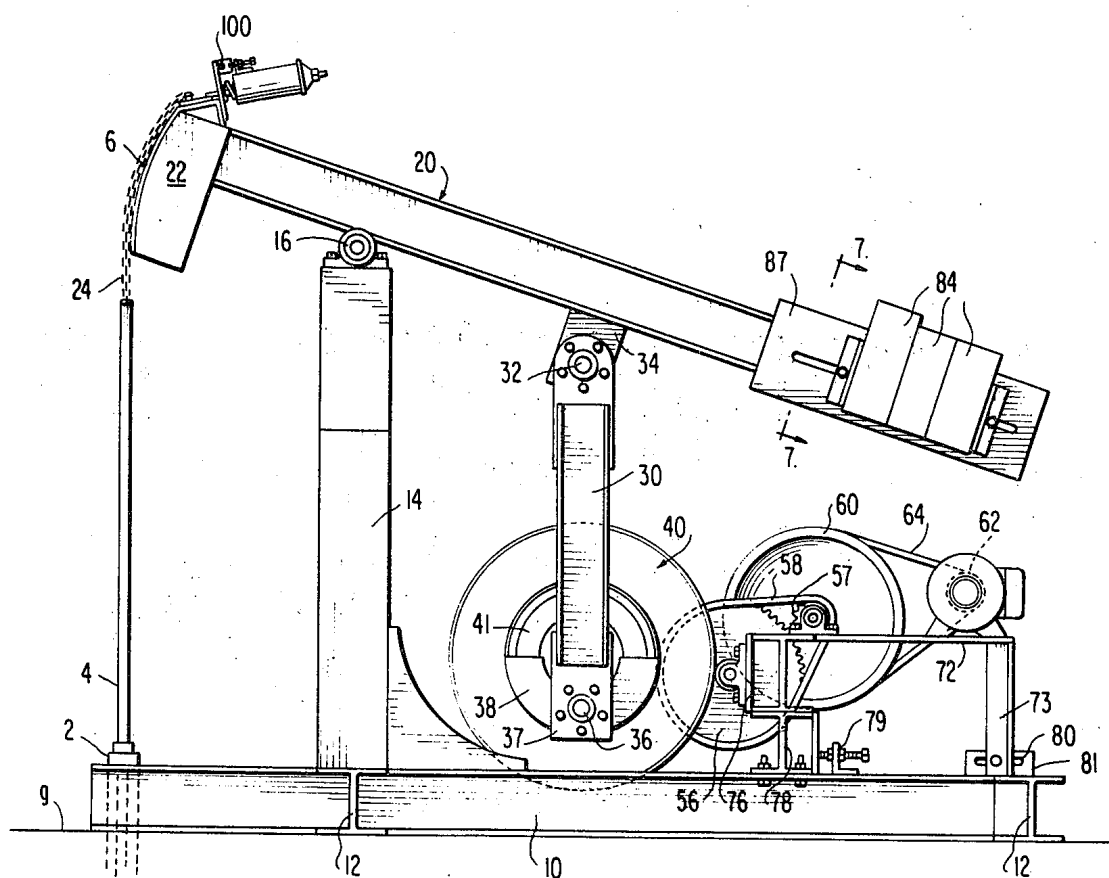
LUFKIN

Family 10/100 - FAMPAT - ©Questel

Title

(US4454778)

Pump jack system for oil well

Images**Publication numbers with kind code & date**[US4454778](#)

A 1984-06-19 US4454778

**Abstract**

(US4454778)

A pump jack system for an oil well comprising a walking beam having one end connected to a vertical pump rod while being pivoted intermediate its ends for rocking movement by means of a single vertical connecting arm driven through an eccentric connection to a cushioned wheel, preferably a pneumatic tire. The latter is driven by a motor through pulley and sprocket members which provide speed reduction to a horizontal drive shaft that engages across the surface of the wheel to drive the same. The other end of the walking beam is provided with weights slidable along the beam into adjusted positions for counterbalancing the forces imposed on the beam through the pump rod. The wheel is also suitably weighted to counterbalance the weight of the connecting arm and its bearing on the wheel. To automatically deenergize the motor when the pump rod is jammed in the well, a limit switch assembly is mounted on the beam adjacent the end at which the pump rod is located. The motor and its drive train to the wheel, are mounted on the same support structure to permit easy removal and replacement as a unit.

Inventors

CAMREN VIRGIL

Latest standardized assignees - inventors removed

BAYLESS ALVIN E

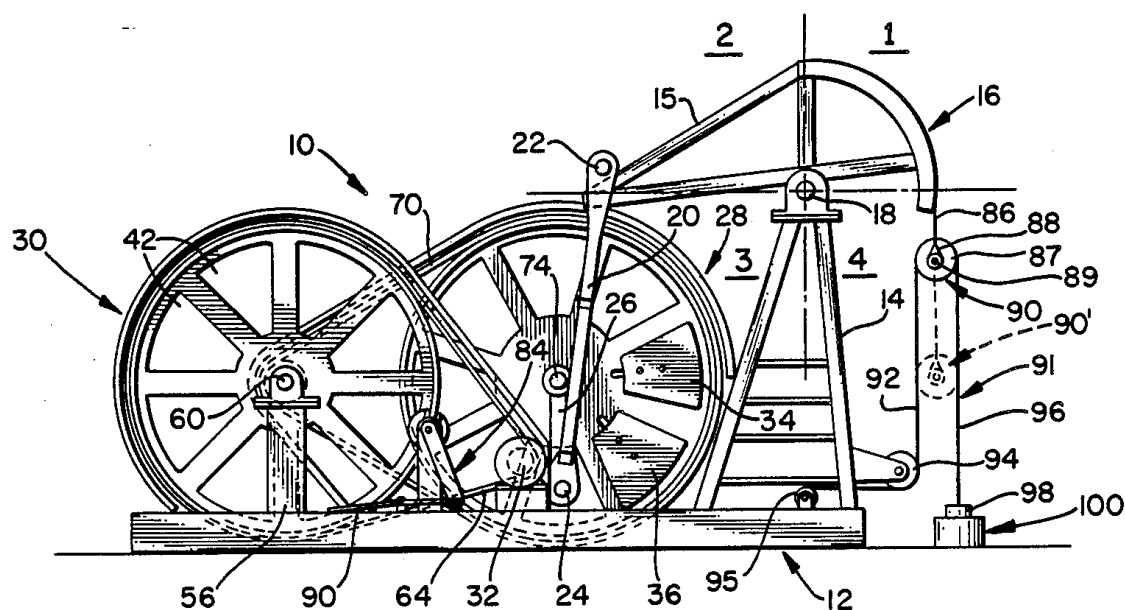
BIRCH RNALD L

Family 11/100 - FAMPAT - ©Questel

Title

(US4743172)

Belt driven pumping unit

Images**Publication numbers with kind code & date**[US4743172](#)

A 1988-05-10 US4743172

**Abstract**

(US4743172)

A pumping unit has a drive train comprising a very large mass including large diameter series connected sheaves, one of which is a large crank sheave. The crank sheave is directly connected to a pitman arm which oscillates a walking beam, which in turn reciprocates a horsehead attached to a bridle. The bridle is connected to a polished rod associated with a downhole pump. The crank wheel, pitman arm, and rocking beam are arranged respective to one another to cause the tail bearing to oscillate predominantly in the second quadrant, and to cause the center of gravity of the pitman arm to be located predominantly between the vertical axis of the crank wheel and the Samson post bearing. The geometry of the crank wheel, pitman arm, and rocking beam provides substantially constant, positional of the polish rod on the downstroke, with rapid positional occurring at peak polish rod velocity, which causes a longer downhole pump stroke because of the induced elongation of the sucker rod string.

Inventors

WATSON JERRY L

Latest standardized assignees - inventors removed

GROOVES & LANDS

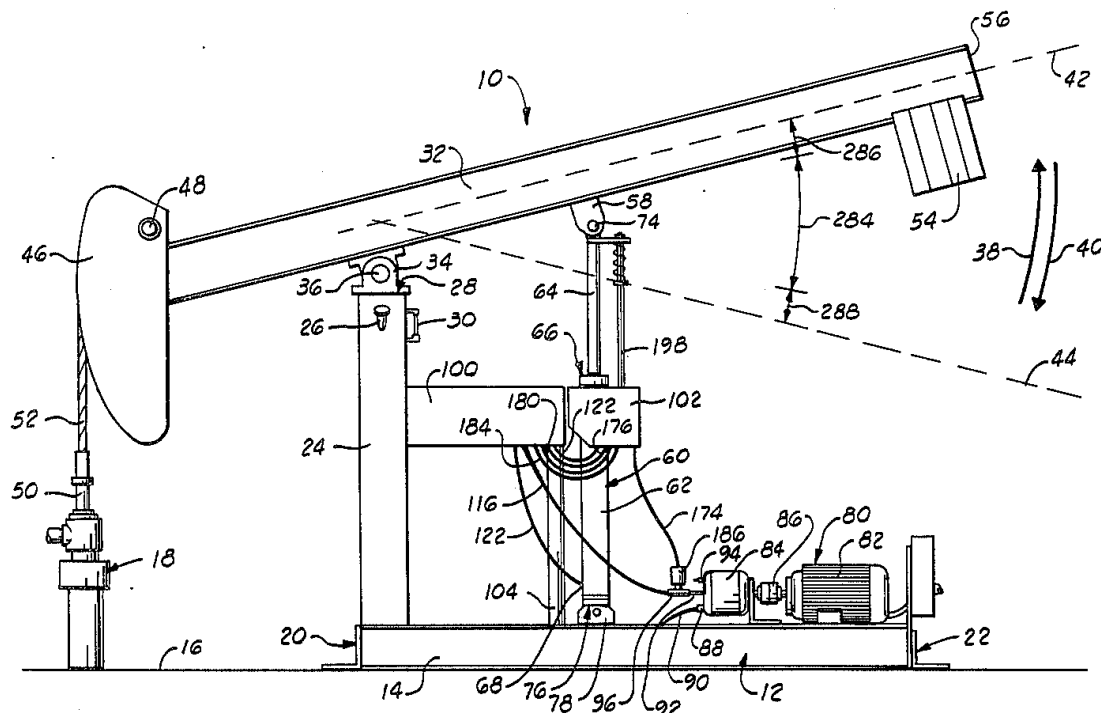
Family 12/100 - FAMPAT - ©Questel

Title

(US4534168)

Pump jack

Images



Publication numbers with kind code & date

US4534168

A 1985-08-13 US4534168



Abstract

(US4534168)

A pump jack having a walking beam oscillated in a vertical arc by a hydraulic actuating cylinder that receives pressurized hydraulic fluid from a variable displacement pump. The hydraulic actuating cylinder is controlled by a hydraulic valve having an operating member mechanically shifted by a second hydraulic actuating cylinder near the end points of the pivotation arc of the walking beam to reverse the direction of movement of the walking beam during the shifting of the operating member of the hydraulic valve. The second hydraulic actuating cylinder is controlled by a second hydraulic valve that transmits pressure to the second hydraulic actuating cylinder from the variable displacement pump and reverses the flow of pressurized hydraulic fluid to the ports of the second hydraulic actuating cylinder near the end points of the pivotation arc of the walking beam.

Inventors

BRANTLY NEWBY O

Family 13/100 - FAMPAT - ©Questel

Title

(CA1193345)

Pump jack control apparatus

Publication numbers with kind code & date

CA1193345

A 1985-09-10 CA1193345



Abstract

(CA1193345)

The flow of hydraulic fluid to the pump of a pump jack and consequently the stroke of the polished rod is controlled by a pair of magnetic proximity limit switches mounted on the frame of the pump jack, and a magnet mounted on the polished rod. Closing of one switch by the magnet actuates a relay, which connects a battery to a solenoid for opening a valve through which hydraulic fluid is fed to one side of a double acting control cylinder. The control cylinder operates a pump, which feeds hydraulic fluid to one of a pair of operating cylinders which move the walking beam, horsehead and polished rod. Closing of the other switch reverses the flow of hydraulic fluid to the control cylinder which causes the pump to feed hydraulic fluid to the other operating cylinder while taking oil from the first operating cylinder.

Inventors

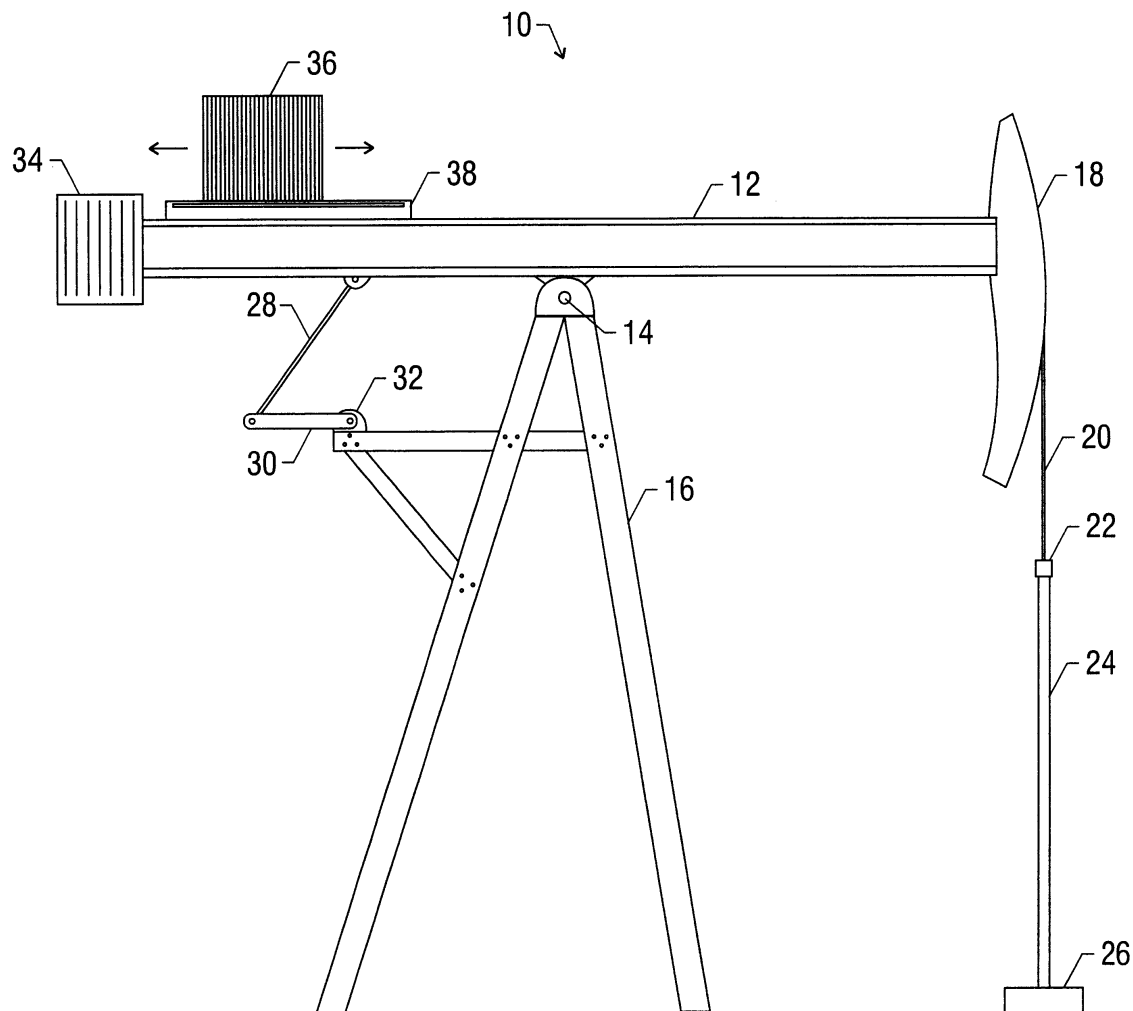
CREAMER REGINALD D

Family 14/100 - FAMPAT - ©Questel

Title

(US6386322)

Method and apparatus for oil well pumping

Images**Publication numbers with kind code & date**[US6386322](#)

B1 2002-05-14 US6386322

**Abstract**

(US6386322)

A walking beam pumping system is disclosed wherein the pumping system's prime mover is gravity. In one embodiment, the system comprises a walking beam pivotally coupled to a support structure at a pivot point substantially central along the length of the walking beam. A counterbalance weight is disposed along the length of the walking beam. A position device is provided for moving the counterbalance weight along at least a portion of the length of the walking beam. As the counterbalance weight moves along the length of the walking beam, the beam's center of gravity is modulated. By modulating the position of the counterbalance weight in an appropriate manner, the walking beam is caused to pivot back and forth with respect to the support structure. A pumping assembly, for example a sucker rod string, is attached to one end of the walking beam, such that as the walking beam pivots back and forth, the pumping system is actuated to pump fluid out of, for example, an oil well bore. In one embodiment, the positioning device for moving the counterbalance weight comprises a linear motor.

Inventors

MCCORMICK JAMES

Latest standardized assignees - inventors removed

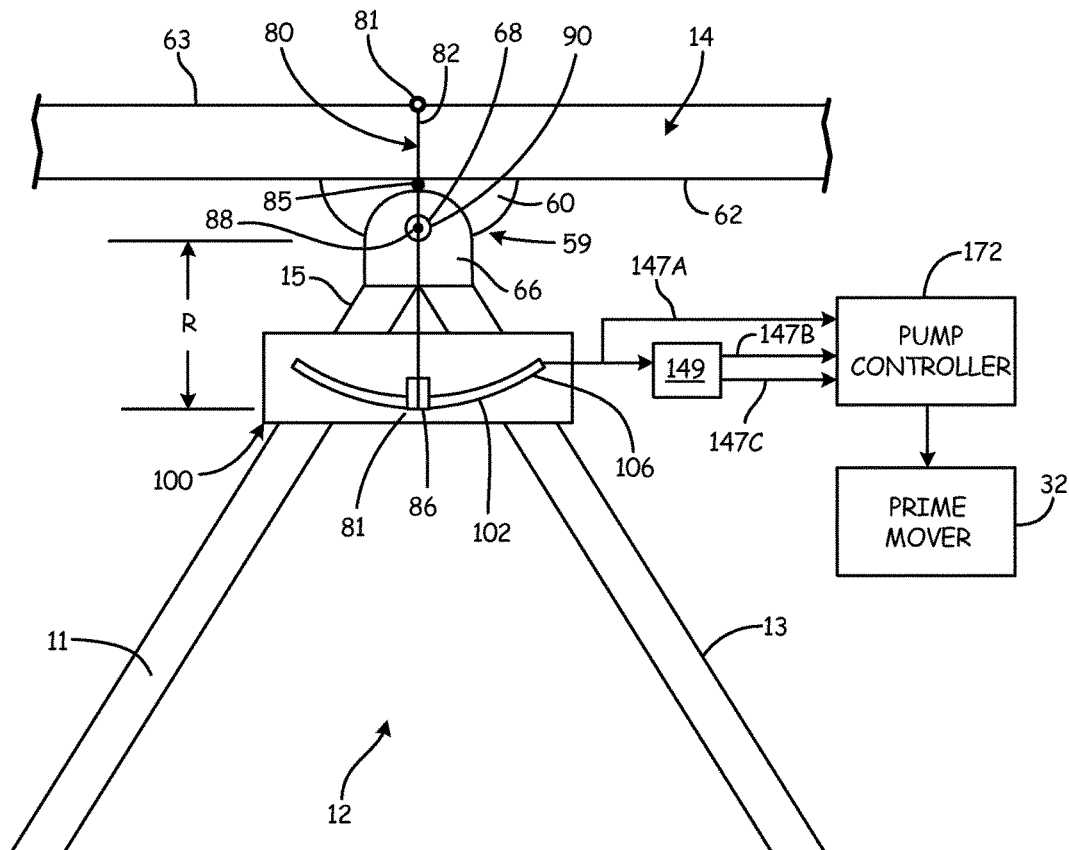
BALDOR ELECTRIC

Family 15/100 - FAMPAT - ©Questel

Title

(WO2015117065)

System and method of monitoring and optimizing the performance of a well pumping system

Images**Publication numbers with kind code & date**

US9938805	B2	2018-04-10	US9938805
US20150308242	A1	2015-10-29	US20150308242
WO2015/117065	A1	2015-08-06	WO2015117065

**Abstract**

(WO2015/117065)

A system for controlling a speed of a pump jack system (10) having a variable speed prime mover (32) includes a sensor (60, 93) attached to the pump jack system (10). The sensor (60, 93) is capable of detecting an absolute position of a first component (14, 44) of the pump jack system (10) relative to a second component (12, 50) of the pump jack system (10) and configured to send a signal proportional to the sensed absolute position (47A, 147 A) and/or velocity (47B, 147B) and/or acceleration (47C, 147C). The system (10) includes process circuitry (49, 149) configured to accept the signal and perform a calculation related to absolute position (47A, 147 A) and/or velocity (47B, 147B) and/or acceleration (47C, 147C) of the first component (14, 44) relative to the second component (12, 50). The system (10) includes a controller (72, 172) that is configured to receive the signal from the process circuitry (49, 149) and configured to send a signal to the prime mover (32) to adjust a rotational speed of the prime mover (32) and the position of the first component relative (14, 44) to the second component (12, 50).

Inventors

SUPRICK JOSEPH BERNARD
 HANKINSON JOHN MATTHEW
 BALDING JOHN WILLIAM
 WARDLE MICHAEL STEPHEN

Latest standardized assignees - inventors removed

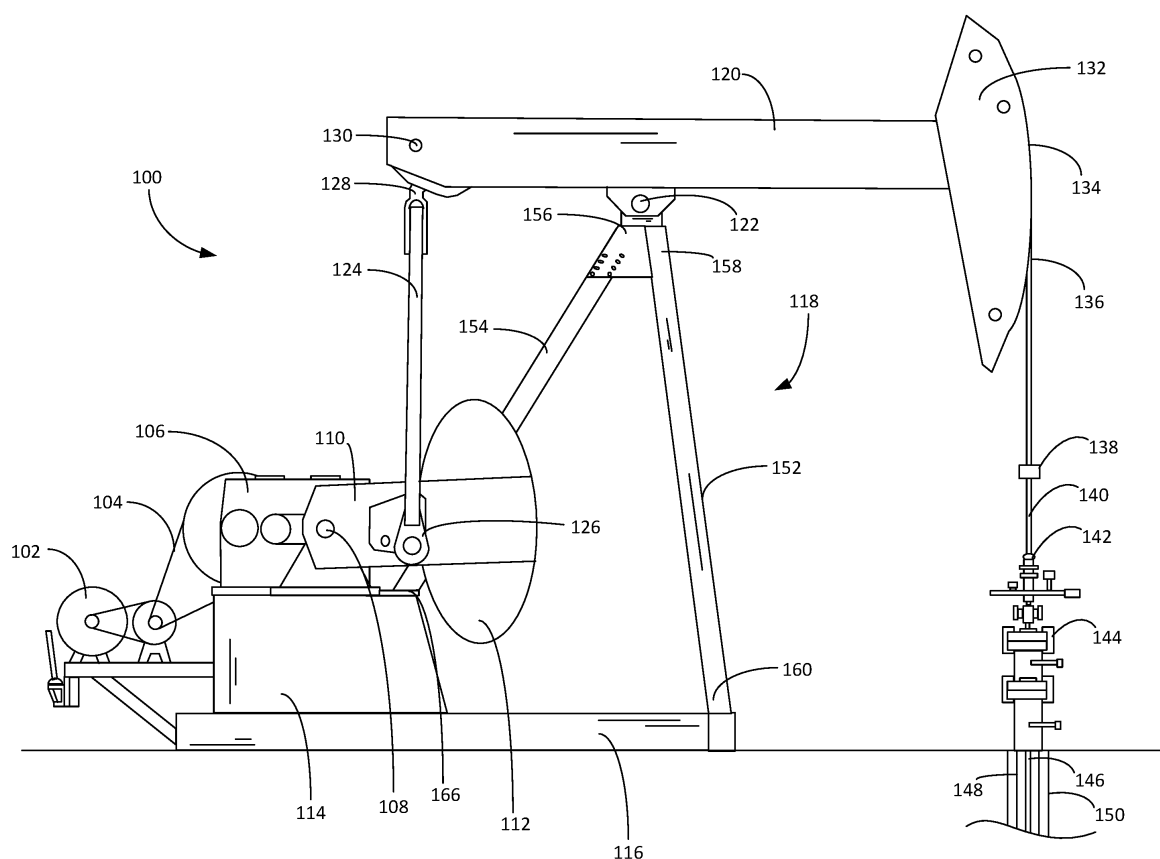
MTS SYSTEM

Family 16/100 - FAMPAT - ©Questel

Title

(WO2018136979)

Rear leg connection for beam pumping unit

Images**Publication numbers with kind code & date**

WO2018/136979	A9	2018-09-27	WO2018136979
WO2018/136979	A3	2018-08-16	WO2018136979
WO2018/136979	A2	2018-07-26	WO2018136979
US20180202596	A1	2018-07-19	US20180202596

**Abstract**

(WO2018/136979)

A pump jack includes a base, a pedestal supported by the base and a Samson post that supports a walking beam. The Samson post includes a front leg that is supported by the base and a connection bracket affixed to the front leg. The Samson post further includes an adjustable rear leg that is connected between the connection bracket and the pedestal. The rear leg can be rotated and shifted up and down within the connection bracket to ensure that the opposite end of the rear leg is properly located on the pedestal.

Inventors

GILCREASE AARON

Latest standardized assignees - inventors removed

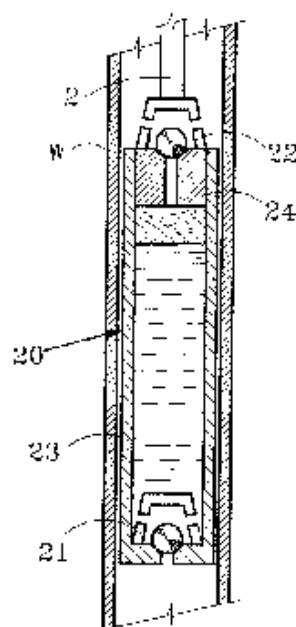
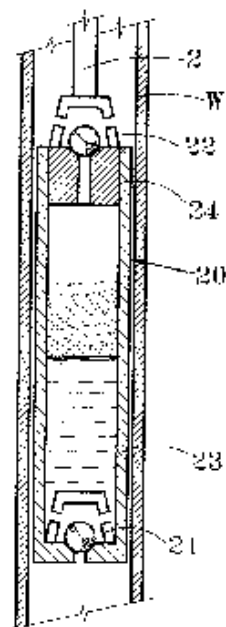
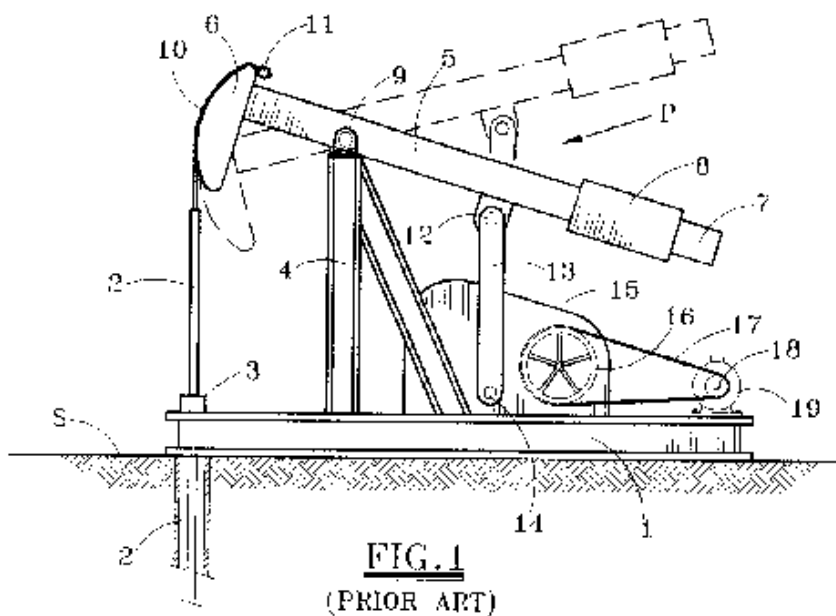
LUFKIN

Family 17/100 - FAMPAT - ©Questel

Title

(US5829958)

Pumping unit with speed reducing means

Images**Publication numbers with kind code & date**[US5829958](#)

A 1998-11-03 US5829958

**Abstract**

(US5829958)

A pumping unit comprising a supporting post and a walking beam, having a head end and a tail end, pivotally connected to the post to allow for rocking of the beam about a horizontal pivot axis. The head end is connected to a vertical pump rod. The walking beam is also connected to one end of an arm, the opposite end of which is connected to a drive assembly for rocking of the beam about the horizontal pivot axis to reciprocate and produce a predetermined number of up and down strokes per minute of the pump rod. The drive assembly includes a rotating power device connected by sheaves and belts a transmission assembly whereby rotation of the power device is translated to a longitudinal force on the arm for rocking of the beam. The drive assembly is further characterized by a speed reducer interpositionable between the power device and the power transmission assembly to substantially reduce the number of up and down strokes per minute of the pump rod.

Inventors

VON HOLLEN DAVID G

Latest standardized assignees - inventors removed

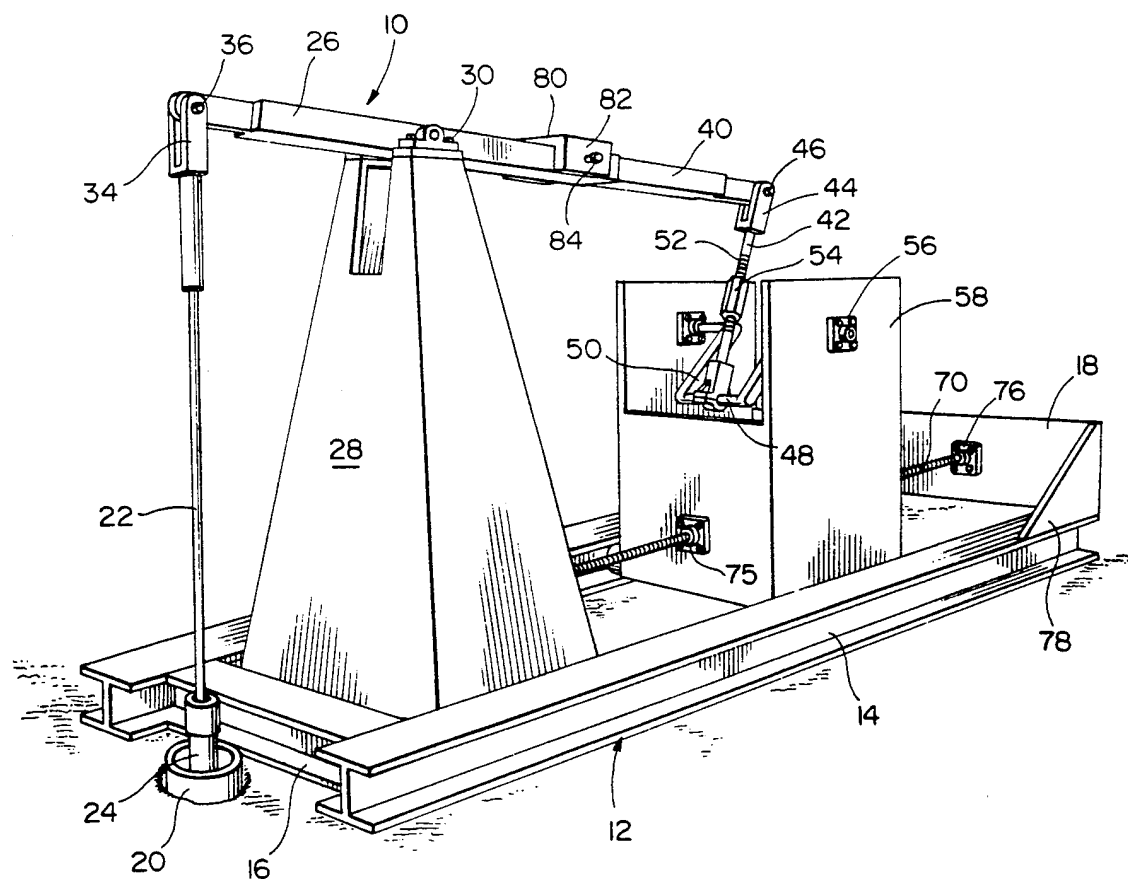
BEAUTECH

Family 18/100 - FAMPAT - ©Questel

Title

(US5105671)

Well pumping unit with adjustable balance beam

Images**Publication numbers with kind code & date**

US5105671 A 1992-04-21 US5105671

**Abstract**

(US5105671)

A well pumping unit utilizing a walking beam that is longitudinally adjustable in length in order to vary the ratio of the length between the fulcrum point of the beam and the end of the beam connected with a pump rod as compared to the length of the beam between the pivot point and the point at which force is applied to the beam to oscillate it about the pivot point. By telescopically adjusting the walking beam and at the same time moving the power unit connected with the walking beam,

the beam can be balanced to enable minimum energy to be applied to the beam to operate a downhole pump. The length of the connecting rod which connects a rotating eccentric powered by a power unit to the walking beam is adjustable in length to compensate for variations in movement of the pump rod resulting from longitudinal adjustment of the beam. The use of the unique features of this invention enables the horsepower requirements of a pump jack to be materially reduced with this invention inquiring a smaller electric motor or other power unit such as a one horsepower unit as compared to a 3 to 5 horsepower unit normally employed on a pump jack.

Inventors

SLATER FRANK W

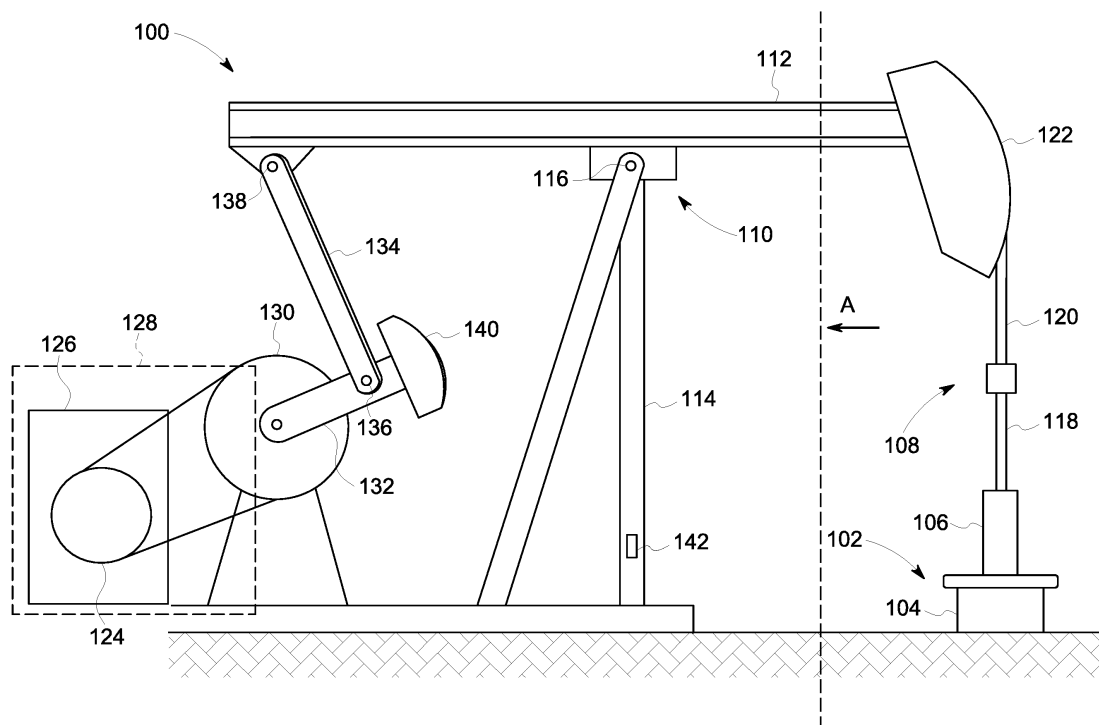
Family 19/100 - FAMPAT - ©Questel

Title

(WO2017197321)

Beam pumping unit and method of operation

Images



Publication numbers with kind code & date

US20170329311 A1 2017-11-16 US20170329311

WO2017/197321 A1 2017-11-16 WO2017197321



Abstract

(WO2017/197321)

A control system for operating a beam pumping unit includes a strain gauge and a beam pumping unit controller. The strain gauge is coupled to a Samson post of the beam pumping unit, and is configured to measure a Samson post strain. The beam pumping unit controller is coupled to the strain gauge and is configured to operate the beam pumping unit to induce a variable load on a rod of the beam pumping unit. Tire beam pumping unit controller is further configured to receive the Samson post strain from the strain gauge and compute the variable load based on the Samson post strain.

Inventors

AL ASSAD OMAR

HUGHES GARY

RAMANI ANAND

Latest standardized assignees - inventors removed

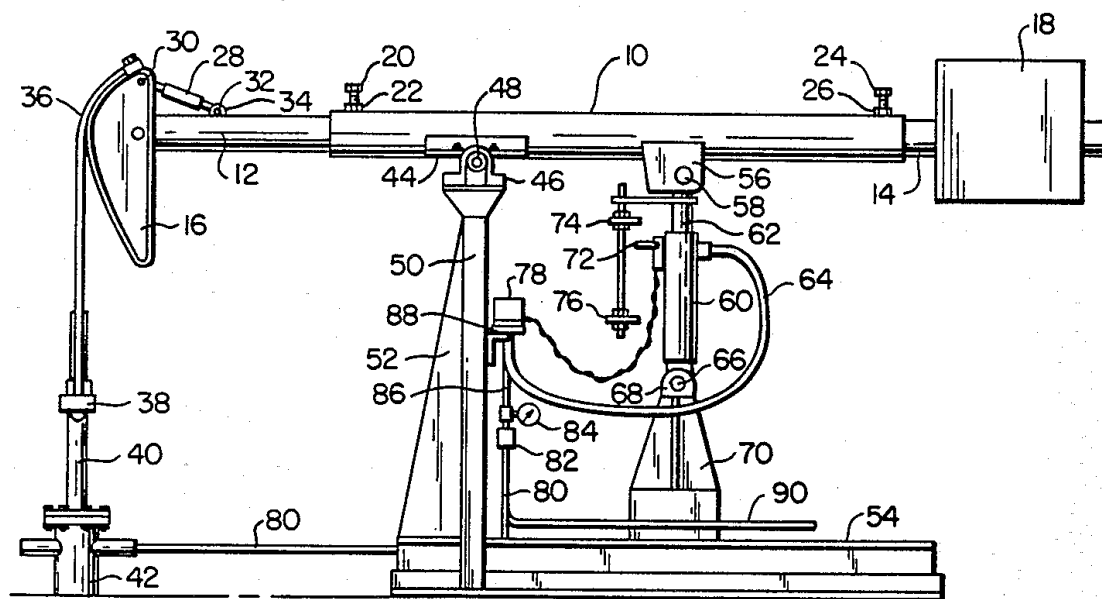
GENERAL ELECTRIC

Family 20/100 - FAMPAT - ©Questel

Title

(US4501119)

Pump jack

Images**Publication numbers with kind code & date**[US4501119](#)

A 1985-02-26 US4501119

**Abstract**

(US4501119)

A pump jack of the type comprising a rocker arm pivotably mounted intermediate its ends on a support member, said rocker arm being divided by said pivot mounting into a sucker-rod limb and a drive limb wherein the improvement comprises a pneumatic motor pivotably attached to the drive support member and further pivotably attached to the mounting base of the pump jack to provide the power to reciprocate the pump jack. The working fluid of said pneumatic motor being natural gas which is available from the well casing of the well without any interference with the flow of the oil in the oil tube of the well thereby making use of an energy source available at any oil well without having to provide gasoline to drive a rotating type gasoline engine or electricity to drive an electric motor usually of the rotating variety. Also the stroke of a pneumatic cylinder inherently smooths out and eliminates the shock loading at the extremes of motion at the piston mounted to the sucker rods of such pump jack at the bottom of the well.

Inventors

STANTON GEORGE E

Latest standardized assignees - inventors removed

NUJACK OIL PUMP

Family 21/100 - FAMPAT - ©Questel

Title

(EP2209994)

Cranked rod pump apparatus and method

Images

AR086680	A1	2014-01-15	AR--86680				
US20130302183	A1	2013-11-14	US20130302183				
JP5399402	B2	2013-11-01	JP5399402				
WO2013/095698	A3	2013-10-17	WO201395698				
AU2013207645	A1	2013-08-15	AU2013207645				
CA2838871	A1	2013-06-27	CA2838871				
WO2013/095698	A2	2013-06-27	WO201395698				
AU2008312571	B2	2013-05-02	AU2008312571				
US8328536	B2	2012-12-11	US8328536				
US20120267120	A1	2012-10-25	US20120267120				
US20110232283	A1	2011-09-29	US20110232283				
JP2011501029	A	2011-01-06	JP2011501029				
EP2209994	A1	2010-07-28	EP2209994				
MX2010004080	A	2010-06-25	MX2010004080				
AU2008312571	A1	2009-04-23	AU2008312571				
CA2703053	A1	2009-04-23	CA2703053				
WO2009/052175	A1	2009-04-23	WO200952175				
US20090097994	A1	2009-04-16	US20090097994				

Abstract

(EP2209994)

An improved apparatus and method are provided, for pumping fluids, such as water and/or hydrocarbons, from a subterranean formation or reservoir, through use of a cranked rod pumping (CRP) apparatus for imparting reciprocating substantially vertical motion to a rod of a sucker-rod pump having a pump stroke. The CRP apparatus includes a motor driven cranked mechanical actuator arrangement. The cranked mechanical actuator arrangement includes a substantially vertically moveable member attached to the rod of the sucker-rod pump for imparting and controlling vertical motion of the rod of the sucker-rod pump. The actuator arrangement may include pneumatic counterbalancing.

Inventors

BECK THOMAS L

PETERSON RONALD G

MACDONALD MICHAEL A

DRY MICHAEL D

Latest standardized assignees - inventors removed

UNICO

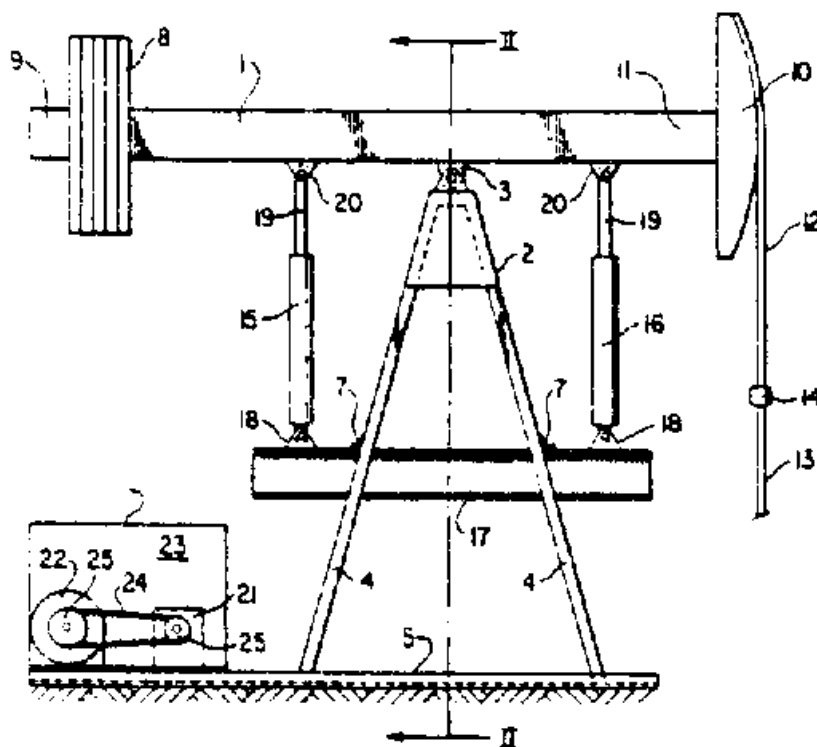
Family 22/100 - FAMPAT - ©Questel

Title

(DE3148563)

"DRIVE FOR CONVEYING PUMP"

Images



Publication numbers with kind code & date

AU559964	B2	1987-03-26	AU-559964
AR231666	A1	1985-01-31	AR-231666
GB2090925	B	1984-08-08	GB2090925
CA1164270	A	1984-03-27	CA1164270
DE3148563	A1	1982-09-23	DE3148563
BR8108061	A	1982-09-21	BR8108061
JPS57124081	A	1982-08-02	JP57124081
GB2090925	A	1982-07-21	GB2090925
AU7821781	A	1982-06-24	AU8178217



Abstract

(DE3148563)

A pump jack drive apparatus includes a pair of hydraulic cylinders 15, 16 connected to a walking beam of the pump jack for reciprocating the horsehead 10, and a pair of microswitches, or proximity switches which are closed by the walking beam at the limits of the stroke thereof for controlling such stroke. The cylinders are driven and controlled by a pump and control unit which includes a valve for feeding hydraulic fluid to one or the other of the hydraulic cylinders, a control cylinder for controlling the valve, and two solenoid operated control valves for controlling movement of the control cylinder in response to closing of the switches by the walking beam.

(From GB2090925 A)

Inventors

CREAMER REGINALD D

Latest standardized assignees - inventors removed

CREAMER REGINALD D

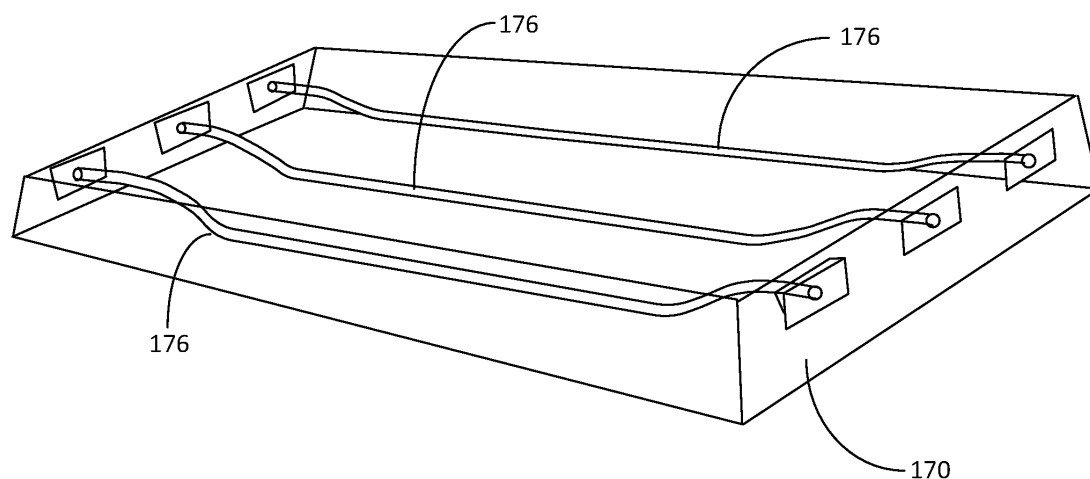
Family 23/100 - FAMPAT - ©Questel

Title

(WO201905850)

Integral precast foundation base for pumping unit

Images

**Publication numbers with kind code & date**[WO2019/005850](#)

A1 2019-01-03

WO201905850

[US20180371717](#)

A1 2018-12-27

US20180371717

**Abstract**

(WO2019/005850)

A beam pumping unit includes an integrated base assembly that has a precast concrete pad and a support base partially embedded within the precast concrete pad. The beam pumping unit further includes a pedestal supported by the support base and a Samson post supported by the support base. Also disclosed is a method for making and assembling a beam pumping unit near a wellhead. The method includes the steps of producing an integrated base assembly that has a support base within a concrete pad, placing the integrated base assembly near the wellhead and securing a Samson post to the integrated base assembly.

Inventors

JONES ROBERT

Latest standardized assignees - inventors removed

GENERAL ELECTRIC

Family 24/100 - FAMPAT - ©Questel

Title

(US20010052704)

Turbogenerator power control system

Images

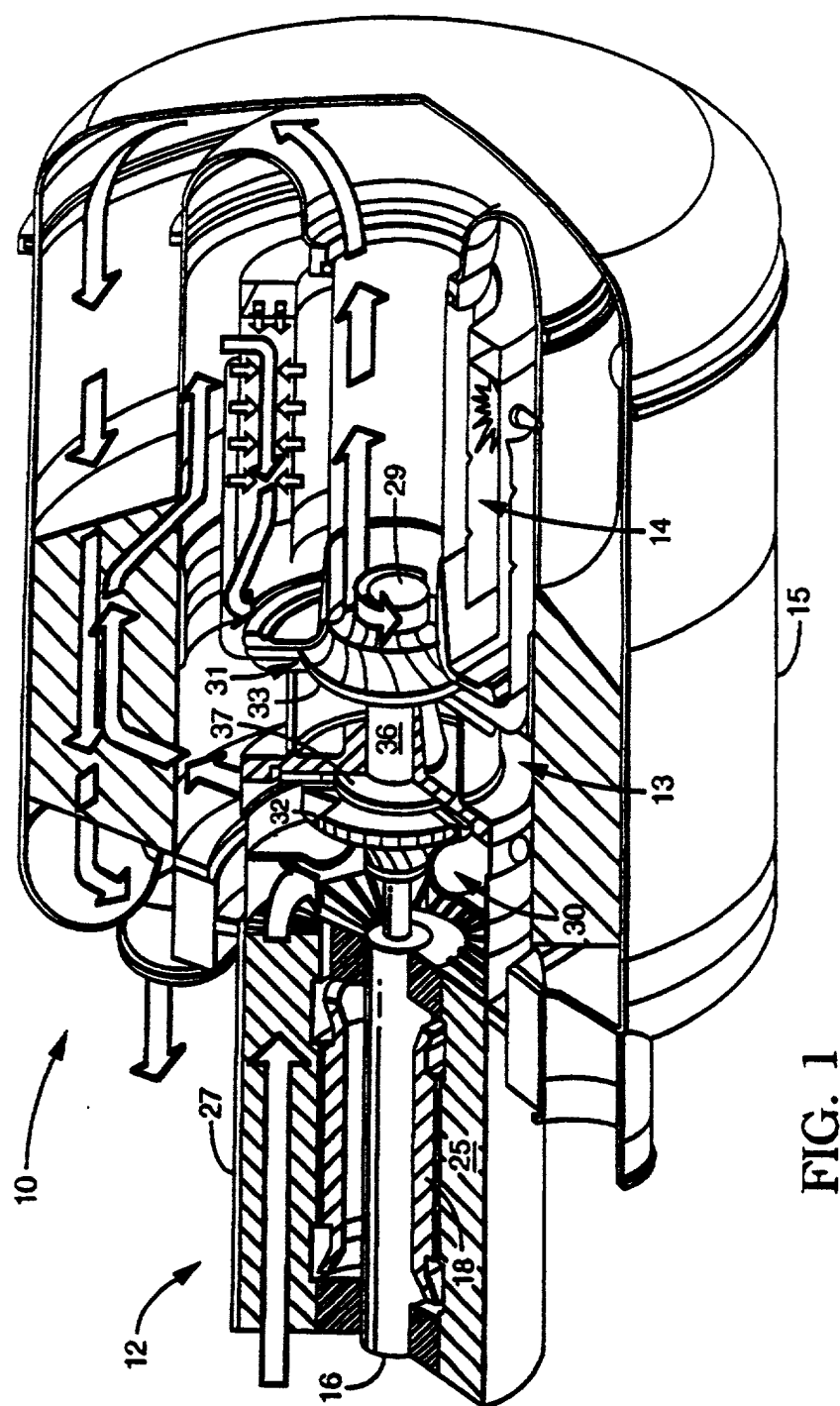


FIG. 1

Publication numbers with kind code & date

US20010052704

A1 2001-12-20

US20010052704

**Abstract**

(US20010052704)

A power control system for a turbogenerator which provides electrical power to one or more pump-jack oil wells. When the induction motor of a pump-jack oil well is powered by three-phase utility power, the speed of the pump-jack shaft varies only slightly over the pumping cycle but the utility power requirements can vary by four times the average pumping power. This power variation makes it impractical to power a pump-jack oil well with a stand-alone turbogenerator controlled by a conventional power control system. This power control system comprises a turbogenerator inverter, a load inverter, and a central processing unit which controls the frequency and voltage/current of each inverter. Throughout the oil well's pumping cycle, the central processing unit increases or decreases the frequency of the load inverter in order to axially accelerate

and decelerate the masses of the down hole steel pump rods and oil, and to rotationally accelerate and decelerate the masses of the motor rotors and counter balance weights. This allows kinetic energy to be alternately stored in and extracted from the moving masses of the oil well and allows the oil pumping power to be precisely controlled. Historical data on the load inverter's frequency versus time profile throughout previous pumping cycles, which resulted in nearly constant turbogenerator power requirements, is utilized to further reduce variations in power.

Inventors

BOSLEY ROBERT W

EDELMAN EDWARD C

Latest standardized assignees - inventors removed

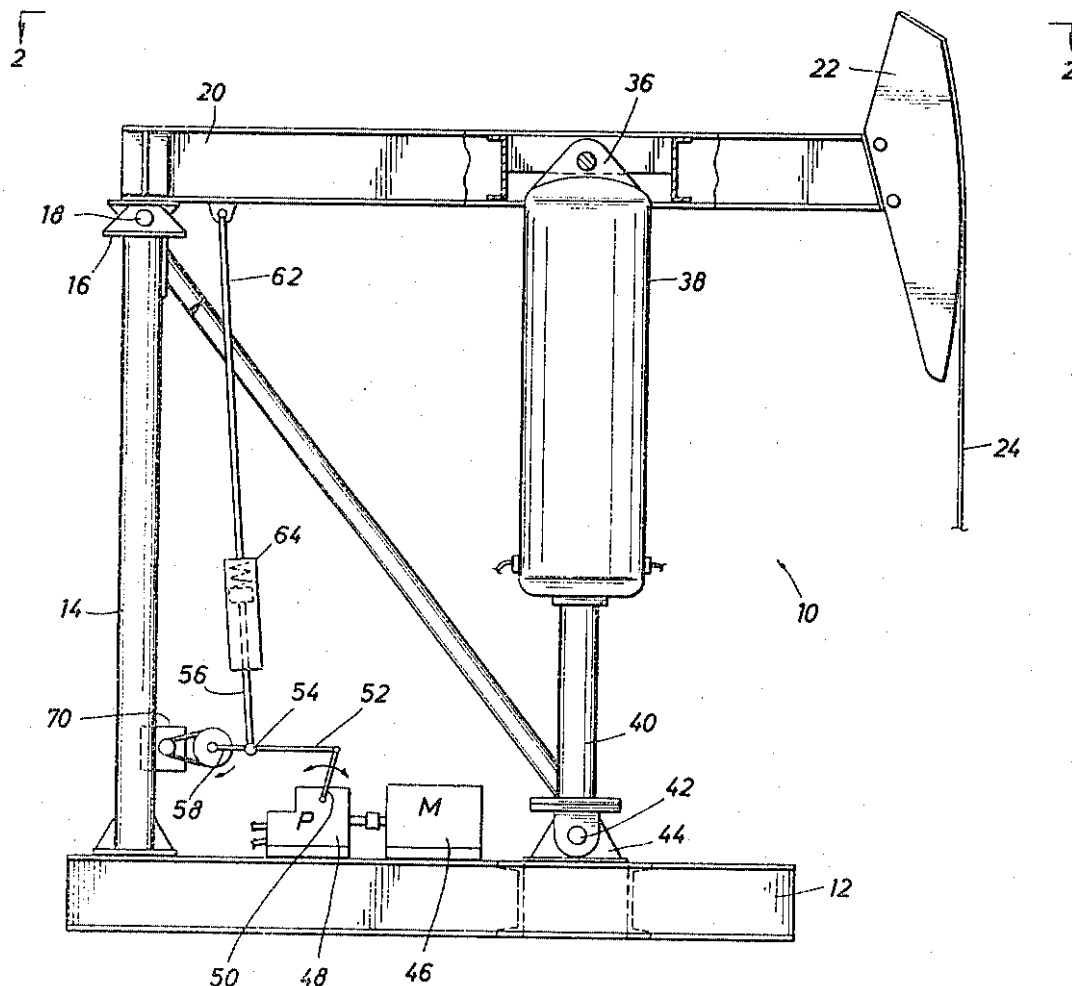
CAPSTONE TURBINE

Family 25/100 - FAMPAT - ©Questel

Title

(US4406122)

Hydraulic oil well pumping apparatus

Images**Publication numbers with kind code & date**[US4406122](#)

A 1983-09-27 US4406122

**Abstract**

(US4406122)

The preferred embodiment is directed to an oil well pumping apparatus incorporating a walking beam having a horsehead at one end which connects to the sucker rods in the oil well. The opposite end of the walking beam is supported on a fixed

pivot. A hydraulic and pneumatic combination unit connects from a supporting platform to a central point on the beam to raise and lower the beam. The improved apparatus utilizes air pressure to balance the static load on the apparatus and dynamically strokes the sucker rod string by imparting a reciprocating motion through hydraulic power applied at a specified rate to raise and lower the walking beam. A pump and motor system for a closed hydraulic loop is included. Alternate preferred embodiments are disclosed. In one form, a lubricating system is incorporated. First and second alternate forms of pickoff apparatus which powers the pneumatically balanced pumping apparatus is also included.

Inventors

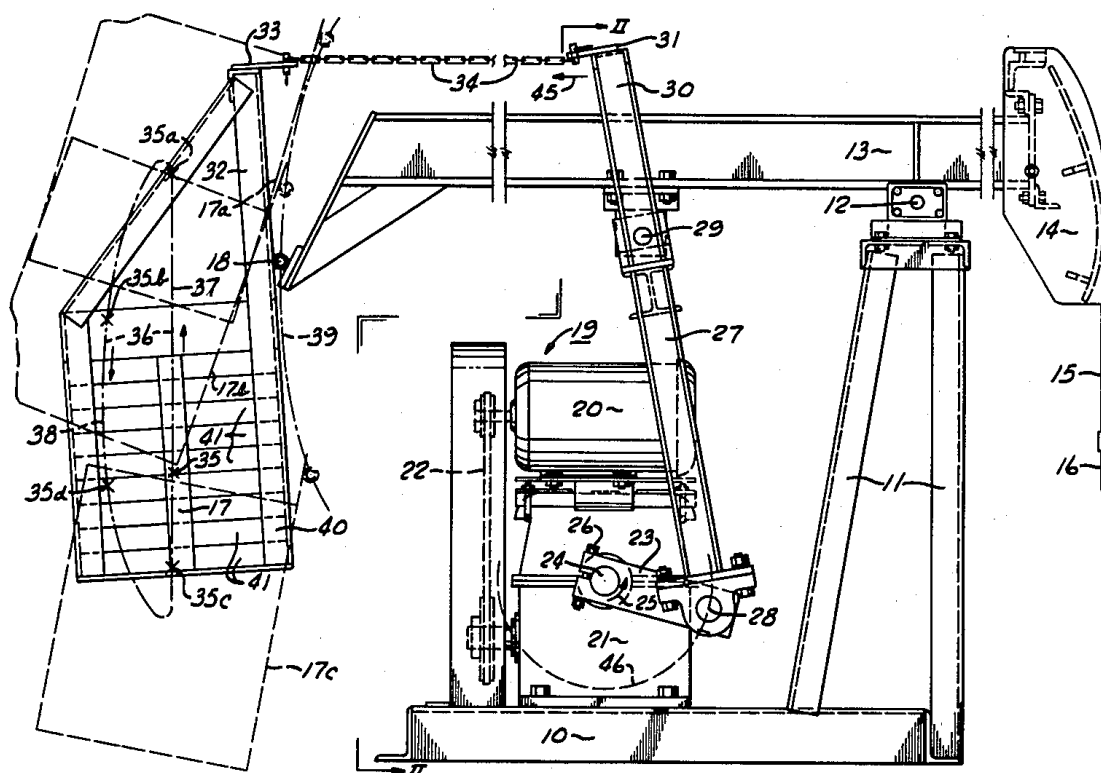
MCDUFFIE THOMAS F

Family 26/100 - FAMPAT - ©Questel

Title

(US4377092)

Well pump jack with controlled counterbalancing

Images**Publication numbers with kind code & date**[US4377092](#)

A 1983-03-22 US4377092

**Abstract**

(US4377092)

A deep well pump jack having a walking beam pivotally mounted on a Samson post with sucker rods depending from one end of the walking beam and a counterbalancing weight carried by the other end of the walking beam, and a prime mover is provided to rock the walking beam up and down in operation through pumping cycles. During pumping cycles, the counterbalancing weight is moved or driven in movement relative to the walking beam such that the center of gravity of the counterbalancing weight follows a vertical pattern of movement throughout each pumping cycle wherein the center of gravity travels in a substantially straight line while traveling upward and in a line of curvature directed outwardly away from the Samson pivot while traveling downward to compensate for the varying loads placed on the prime mover during each pumping cycle.

Inventors

GARMONG VICTOR H

Latest standardized assignees - inventors removed

OIL CAT

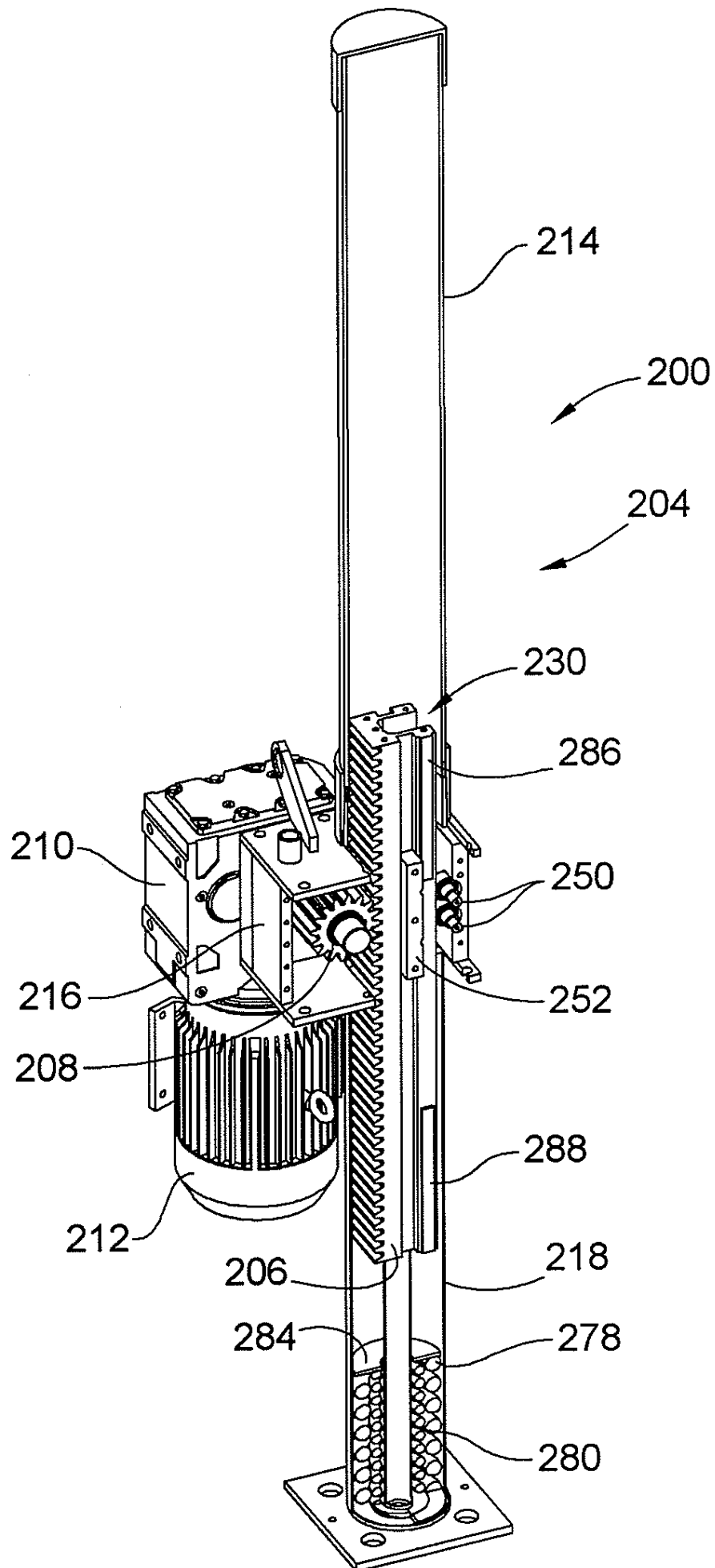
Family 27/100 - FAMPAT - ©Questel

Title

(EP2035702)

Linear rod pump apparatus and method

Images



Publication numbers with kind code & date

EP2035702	B1	2018-08-22	EP2035702
EP2035702	A4	2017-01-11	EP2035702
MX337274	B	2016-02-17	MX-337274
MX335980	B	2016-01-07	MX-335980
CA2654908	C	2014-09-09	CA2654908
US8668475	B2	2014-03-11	US8668475
US8641390	B2	2014-02-04	US8641390
US8555984	B2	2013-10-15	US8555984
MX2013000452	A	2013-08-07	MX2013000452
US20120230841	A1	2012-09-13	US20120230841
US20120174365	A1	2012-07-12	US20120174365
US20120177504	A1	2012-07-12	US20120177504
US8152492	B2	2012-04-10	US8152492
EP2035702	A2	2009-03-18	EP2035702
MX2008015795	A	2009-02-11	MX2008015795
WO2007/146931	A3	2008-11-27	WO2007146931
CA2654908	A1	2007-12-21	CA2654908
WO2007/146931	A2	2007-12-21	WO2007146931
US20070286750	A1	2007-12-13	US20070286750

**Abstract**

(EP2035702)

An apparatus and method for pumping fluids, such as water and/or hydrocarbons, from a subterranean formation or reservoir, include a linear rod pump having a mechanical rack and pinion drive arrangement, adapted for attachment to a pumping mechanism, such as the polished rod at the top of a rod string in a hydrocarbon well. The rack gear, of the rack and pinion drive arrangement, is adapted for connection to, and movement with, the polished rod. The pinion gear does not translate with the rack gear, and is driven by a reversible motor for affecting up and down reciprocating motion of the rack gear and pumping mechanism. Some forms of the invention include a compressible gas counter-balance arrangement. Some forms of the invention include an electronic drive configured for dealing with electric power generated by the motor during a portion of the pumping cycle.

Inventors

BECK THOMAS L

ANDERSON ROBB G

PETERSON RONALD G

MACDONALD MICHAEL A

Latest standardized assignees - inventors removed

UNICO

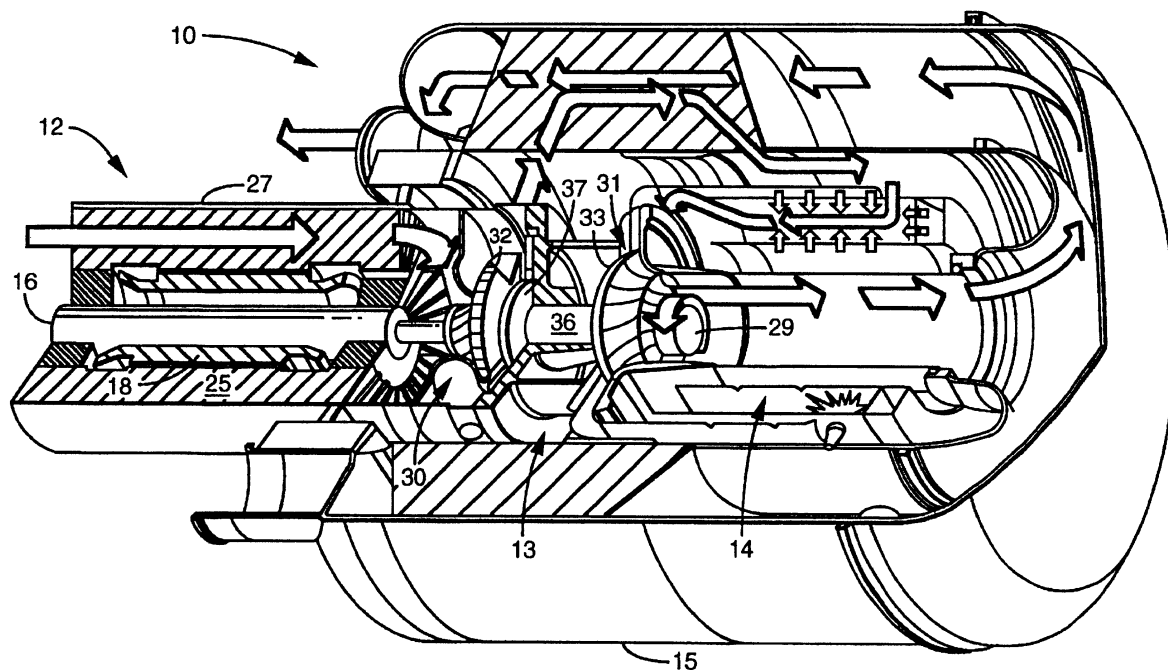
Family 28/100 - FAMPAT - ©Questel

Title

(US6495929)

Turbogenerator power control system

Images



Publication numbers with kind code & date

US6495929	B2	2002-12-17	US6495929
US20020030364	A1	2002-03-14	US20020030364
CA2279320	A1	2000-04-27	CA2279320



Abstract

(US20020030364)

A power control system for a turbogenerator which provides electrical power to one or more pump-jack oil wells. When the induction motor of a pump-jack oil well is powered by three-phase utility power, the speed of the pump-jack shaft varies only slightly over the pumping cycle but the utility power requirements can vary by four times the average pumping power. This power variation makes it impractical to power a pump-jack oil well with a stand-alone turbogenerator controlled by a conventional power control system. This power control system comprises a turbogenerator inverter, a load inverter, and a central processing unit which controls the frequency and voltage/current of each inverter. Throughout the oil well's pumping cycle, the central processing unit increases or decreases the frequency of the load inverter in order to axially accelerate and decelerate the masses of the down hole steel pump rods and oil, and to rotationally accelerate and decelerate the masses of the motor rotors and counter balance weights. This allows kinetic energy to be alternately stored in and extracted from the moving masses of the oil well and allows the oil pumping power to be precisely controlled throughout the pumping cycle, resulting in a constant turbogenerator power requirement.

Inventors

BOSLEY ROBERT W
 EDELMAN EDWARD C
 LAMPE STEVEN W
 PETICOLAS BRIAN W

Latest standardized assignees - inventors removed

CAPSTONE TURBINE

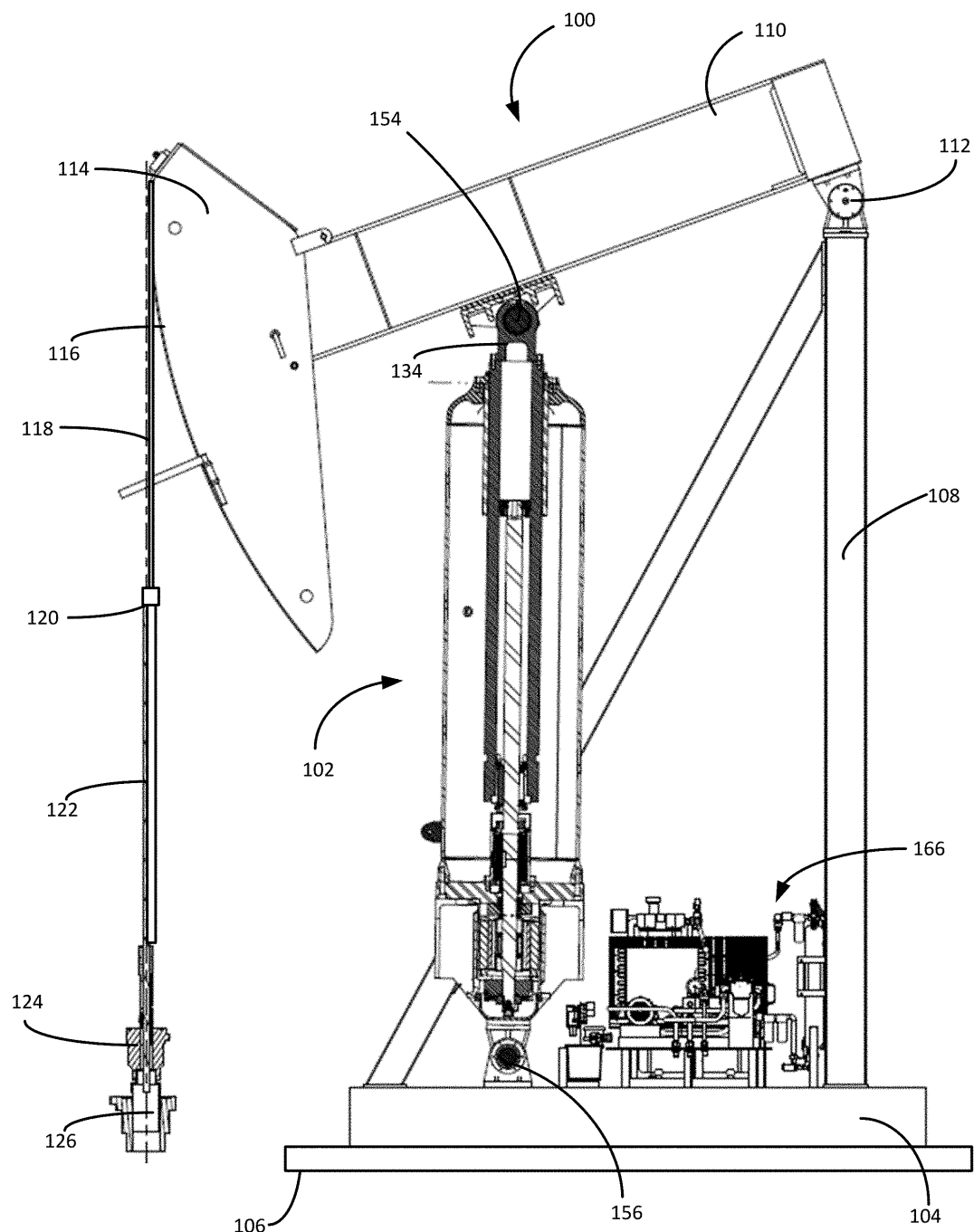
Family 29/100 - FAMPAT - ©Questel

Title

(WO201974994)

Linear drive beam pumping unit

Images



Publication numbers with kind code & date

[WO2019/074994](#)

A1 2019-04-18

WO201974994

[US20190107105](#)

A1 2019-04-11

US20190107105



Abstract

(WO2019/074994)

A beam pumping unit includes a base, a Sampson post supported by the base, a walking beam pivotally supported by the Sampson post and a horsehead on the front end of the walking beam, The horsehead is connected to a polished rod that extends through a wellhead to a subsurface pump. Tile beam pumping unit includes a linear drive unit connected between the base and the Sampson post to force the walking beam to rock up and down on the Sampson post. The linear drive unit includes a linear drive system and an integrated pneumatic counterbalance system.

Inventors

DOYLE DAVID WARREN

Latest standardized assignees - inventors removed

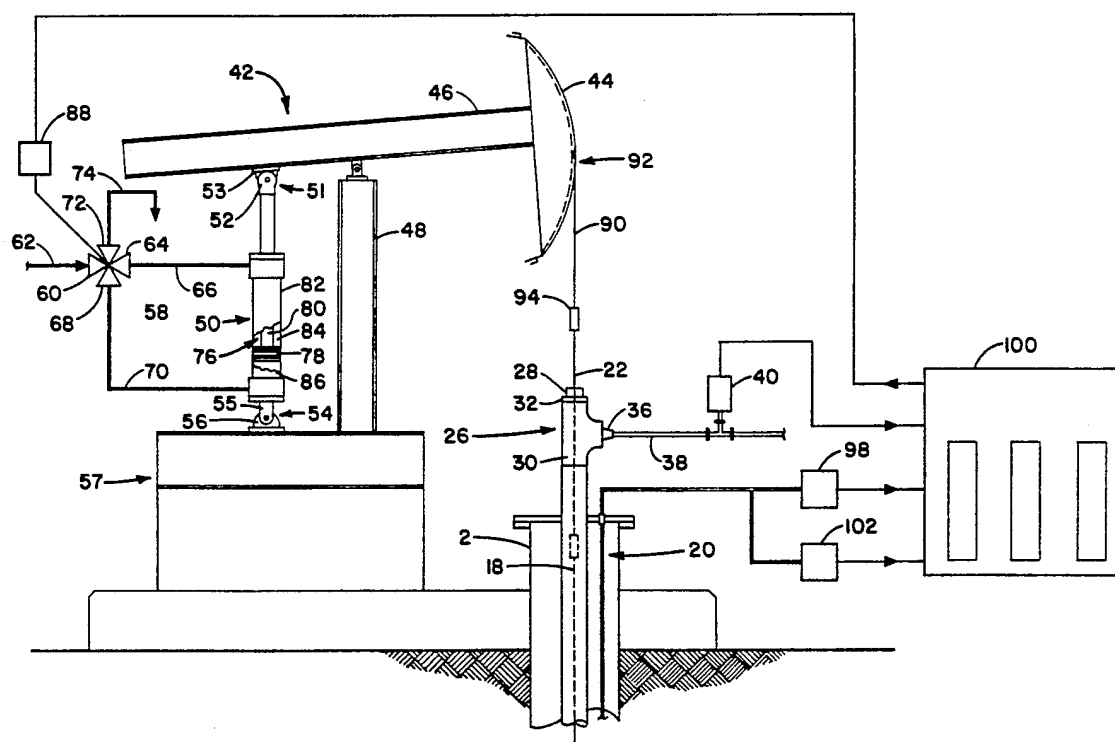
LUFKIN

Family 30/100 - FAMPAT - ©Questel

Title

(US5316085)

Environmental recovery system

Images**Publication numbers with kind code & date**[US5316085](#)

A 1994-05-31 US5316085

**Abstract**

(US5316085)

A system for recovering subterranean fluids from a site contaminated by hazardous waste is disclosed. The system for recovering the fluids in a wellbore comprises pump unit means for pumping the subterranean fluid from the wellbore, liquid level sensing means for sensing the liquid level within the wellbore, and activation means for activating the pumping unit means in response to the fluid level sensing means. The system may also include microprocessor means for storing and interpreting the data from the sensing means.

Inventors

DAWSON WILLIAM C

Latest standardized assignees - inventors removed

EXXONMOBIL RESEARCH & ENGINEERING

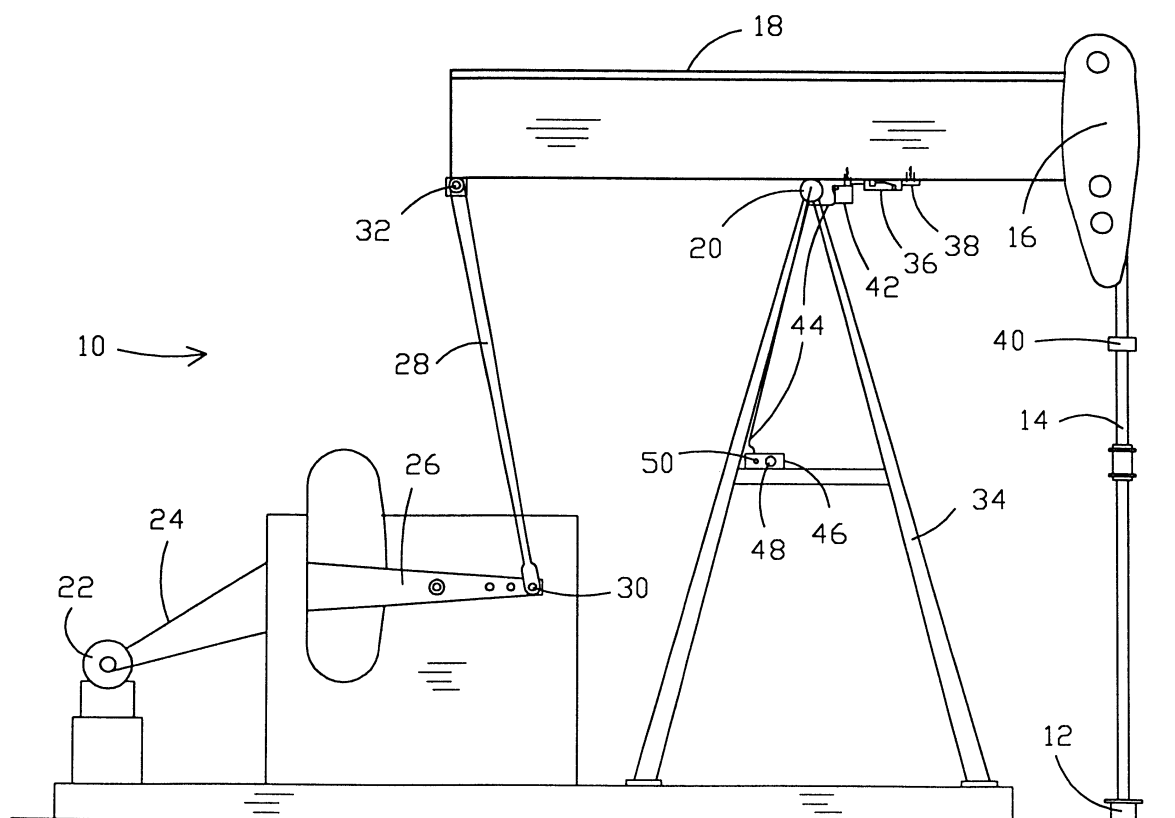
Family 31/100 - FAMPAT - ©Questel

Title

(US6176682)

Pumpjack dynamometer and method

Images



Publication numbers with kind code & date

US6409476	B2	2002-06-25	US6409476
US20010021347	A1	2001-09-13	US20010021347
US6176682	B1	2001-01-23	US6176682



Abstract

(US6176682)

A dynamometer readout (42, 46) and method is disclosed for obtaining dynamometer information (110) related to pumpjacks (10). For this purpose, a change of pivotal direction of the walking beam (18) may be detected by processor (82) utilizing an encoder component (60) with spaced slots (64) therein and light signal devices (68, 70, 72, 74) positioned to have a spacing different from that of the spacing of the slots (64). Software techniques filter out effects of stray mechanical vibrations. An infrared transceiver (46, 50, 100) of a preferred embodiment includes a radio frequency carrier generator (90) and modulator (88) that produces an infrared signal receivable by a low cost consumer radio receiver. The radio frequency modulation technique for infrared signals (96) and related filtering (98, 102, 104) condition formatted infrared signals for utilization in daylight and through a car window for drive-by downloading of data to second computer (108).

Inventors

MILLS MANUEL D

Latest standardized assignees - inventors removed

DJAX

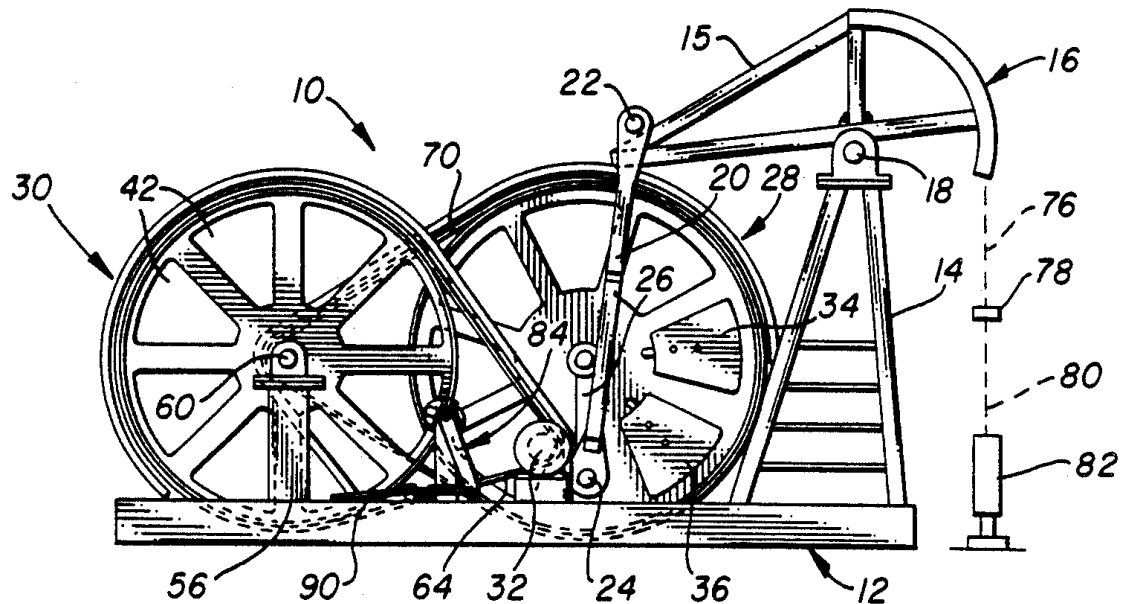
Family 32/100 - FAMPAT - ©Questel

Title

(US4723452)

Belt driven pumping unit

Images



Publication numbers with kind code & date

[US4723452](#)

A 1988-02-09 US4723452



Abstract

(US4723452)

A pumping unit has very large series connected crank and flywheel sheaves. The crank sheave is connected to oscillate a walking beam which reciprocates a horsehead attached to a bridle. The bridle is connected to a polished rod associated with a downhole pump.

Inventors

WATSON JERRY L

Latest standardized assignees - inventors removed

GROOVES & LANDS

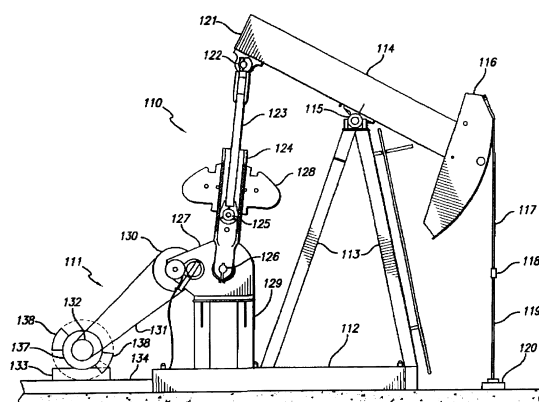
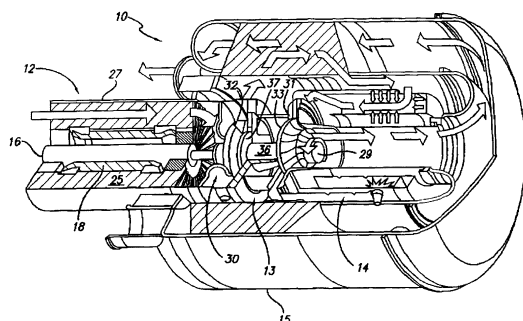
Family 33/100 - FAMPAT - ©Questel

Title

(US6325142)

Turbogenerator power control system

Images



Publication numbers with kind code & date

[US6325142](#)

B1 2001-12-04 US6325142



Abstract

(US6325142)

A power control system for a turbogenerator which provides electrical power to one or more pump-jack oil wells. When the induction motor of a pump-jack oil well is powered by three-phase utility power, the speed of the pump-jack shaft varies only slightly over the pumping cycle but the utility power requirements can vary by four times the average pumping power. This power variation makes it impractical to power a pump-jack oil well with a stand-alone turbogenerator controlled by a conventional power control system. This power control system comprises a turbogenerator inverter, a load inverter, and a central processing unit which controls the frequency and voltage/current of each inverter. Throughout the oil well's pumping cycle, the central processing unit increases or decreases the frequency of the load inverter in order to axially accelerate and decelerate the masses of the down hole steel pump rods and oil, and to rotationally accelerate and decelerate the masses of the motor rotors and counter balance weights. This allows kinetic energy to be alternately stored in and extracted from the moving masses of the oil well and allows the oil pumping power to be precisely controlled. Historical data on the load inverter's frequency versus time profile throughout previous pumping cycles, which resulted in nearly constant turbogenerator power requirements, is utilized to further reduce variations in power.

Inventors

BOSLEY ROBERT W

EDELMAN EDWARD C

Latest standardized assignees - inventors removed

CAPSTONE TURBINE

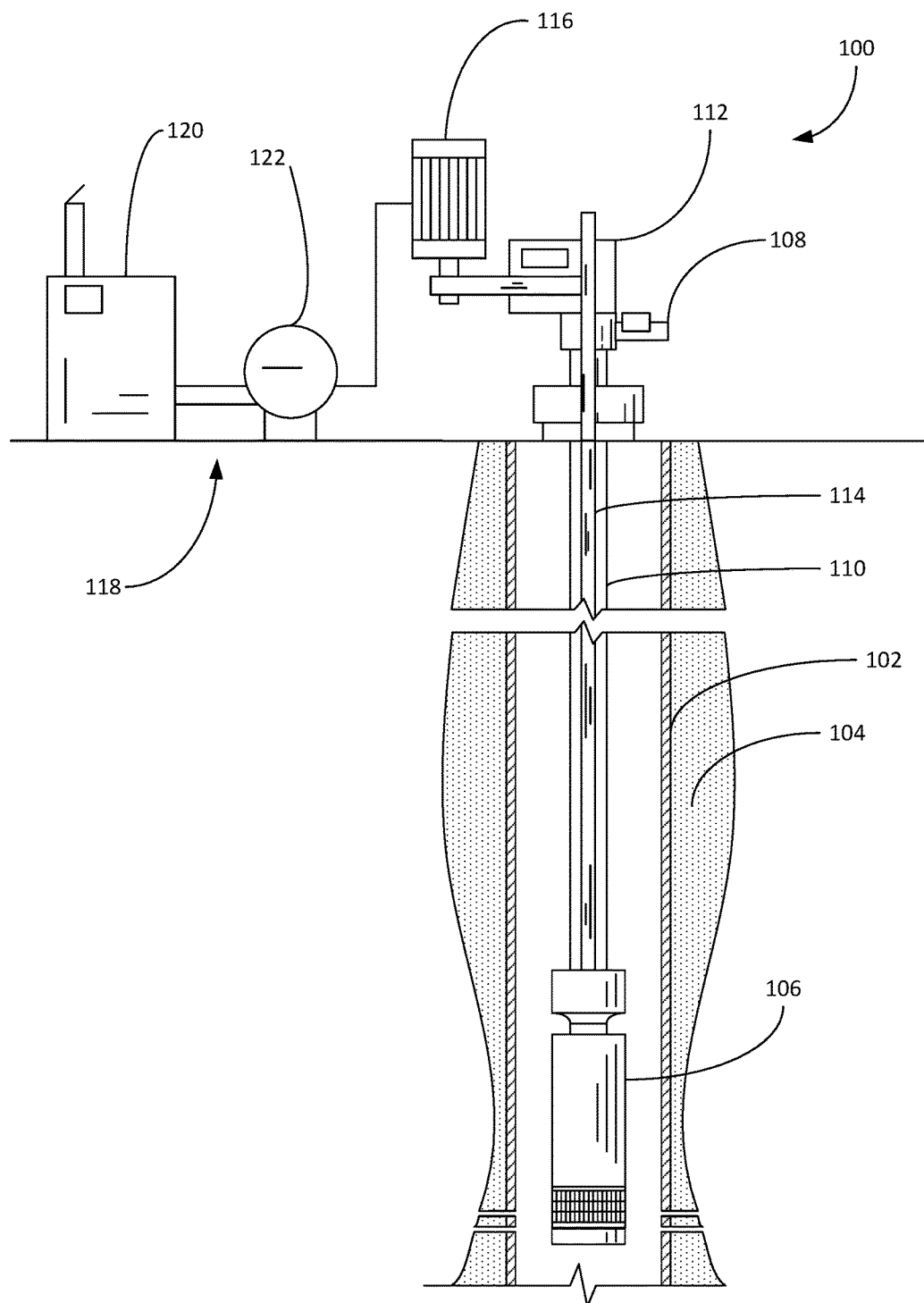
Family 34/100 - FAMPAT - ©Questel

Title

(WO2018140795)

Load shedding control system for pumps

Images



Publication numbers with kind code & date

AR110915	A1	2019-05-15	AR-110915
US20180216607	A1	2018-08-02	US20180216607
WO2018/140795	A1	2018-08-02	WO2018140795



Abstract

(WO2018/140795)

A method for controlling a pumping system includes a pump, a pump motor, a generator that provides power to the pump motor and an engine that drives the generator. The method includes the steps of operating the pump at a first operational speed, detecting a transient high load event, reducing the speed of the pump to a second operational speed, detecting the end of the transient high load event, and increasing the speed of the pump to the first operational speed.

Inventors

COLLINS LLOYD

Latest standardized assignees - inventors removed

BAKER HUGHES

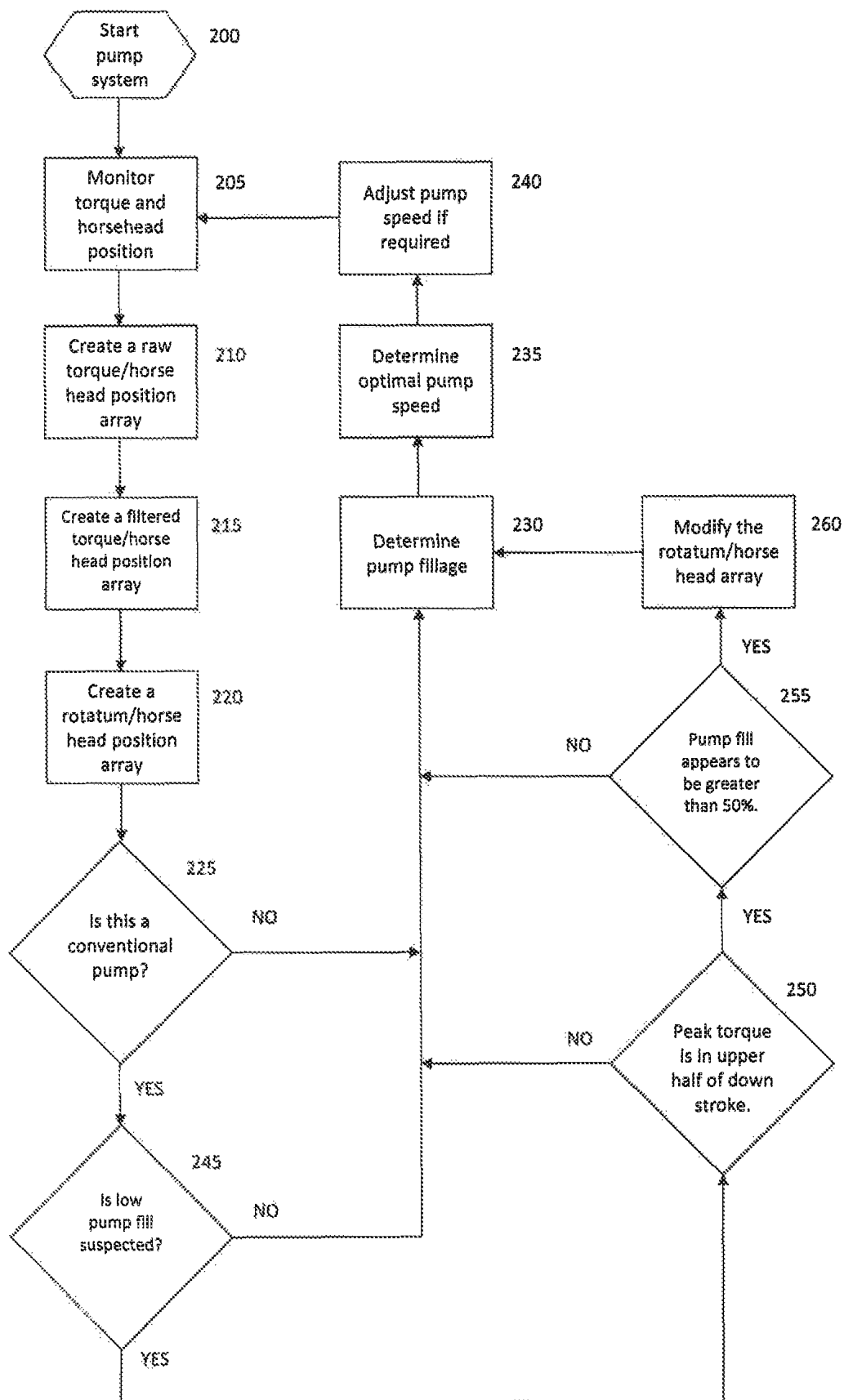
Family 35/100 - FAMPAT - ©Questel

Title

(WO201826706)

Method of determining pump fill and adjusting speed of a rod pumping system

Images



Publication numbers with kind code & date

US10408205

B2 2019-09-10

US10408205

US20180038366

A1 2018-02-08

US20180038366

WO2018/026706

A1 2018-02-08

WO201826706



Abstract

(WO2018/026706)

A method and system for determining the pump fillage of a sucker rod pumping system using torque feedback when pumping wellbore fluids from the particular well on which the sucker rod pumping system is installed. During the pump stroke, a microprocessor samples torque of the pump's mechanical system at an associated horsehead position at regular intervals and once the stroke is completed the raw torque samples and associated horsehead positions are placed in an array, the array of raw torque samples and horsehead positions can be filtered by the microprocessor into a second filtered array and then converted by the microprocessor into a rotatum array(derivative of torque with respect to time) of one or both of the raw or filtered arrays and stored as a rotatum array. The down stroke portion of the rotatum array is then analyzed by the microprocessor to determine the horsehead position when the piston of the down hole pump encounters wellbore fluid in the well (pump fillage). The microprocessor, based on the determined pump fillage, adjusts the speed of the pumping system to maintain an optimal pump fillage determined to be the most economical for the particular well on which the sucker rod pumping system is installed.

Inventors

SOBIN ZACKERY

GUIMOND SCOTT

REDMOND JAMES

Latest standardized assignees - inventors removed

SCHNEIDER ELECTRIC SYSTEMS CANADA

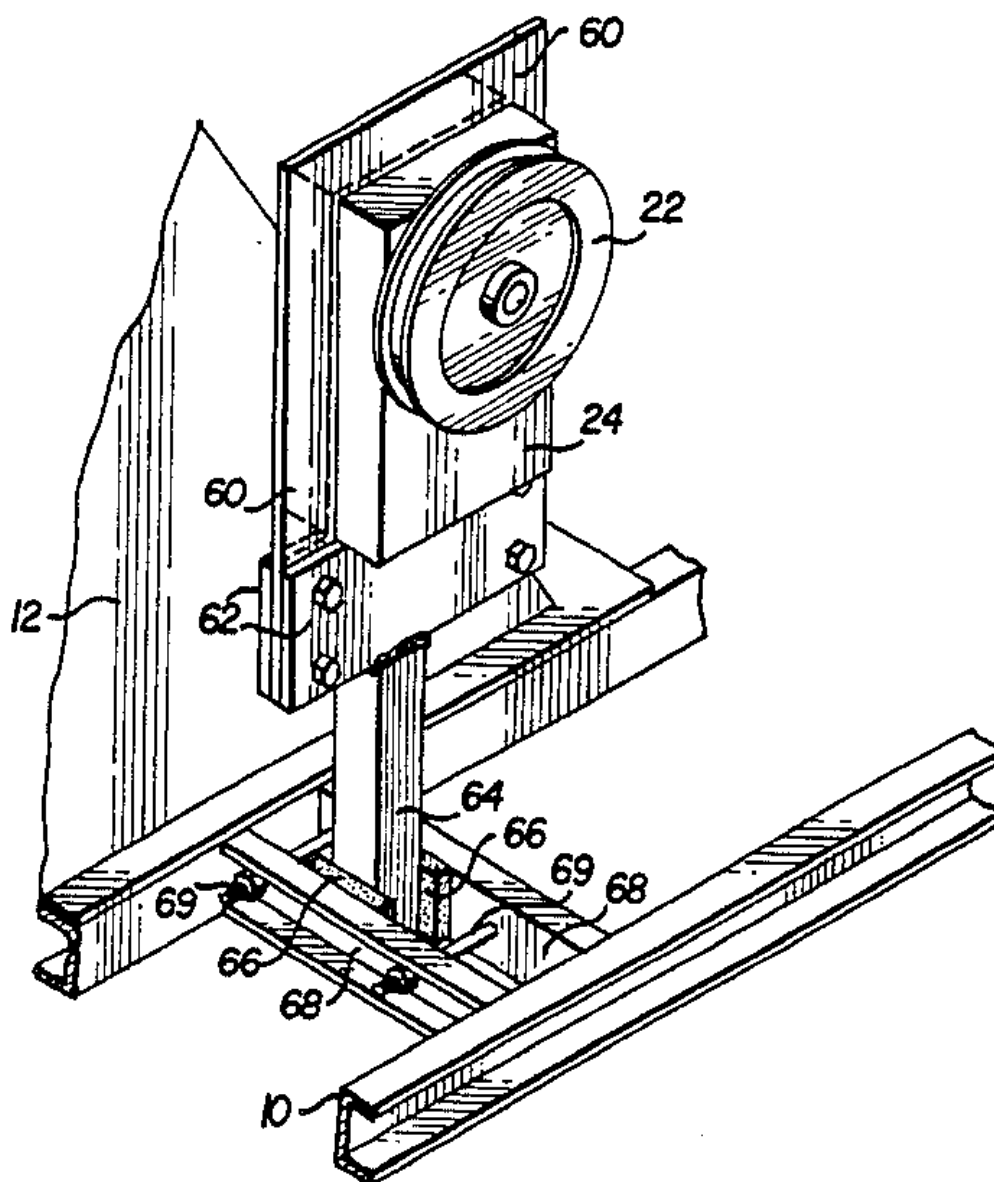
Family 36/100 - FAMPAT - ©Questel

Title

(US4502343)

Pump jack

Images



Publication numbers with kind code & date

US4502343	A	1985-03-05	US4502343
CA1164271	A	1984-03-27	CA1164271



Abstract

(US4502343)

A pump jack having a resiliently mounted speed reducer. The pump jack comprises a frame, a sampson post, and a walking beam pivotally mounted on the sampson post. Crank shaft bearings are securely mounted on the sampson post. A speed reducer is resiliently mounted to the sampson post and coupled to the crank shaft extending through the crank shaft bearings. Thus, non-torsional forces are transferred to the sampson post, reducing wear on the speed reducer and obviating the necessity of a speed reducer of large size. This results in decreased power necessary to run the pump jack. This also allows the use of a single pitman rod configuration, which is subject to less wear than previous double pitman configurations.

Inventors

DINGFELDER ALAN W

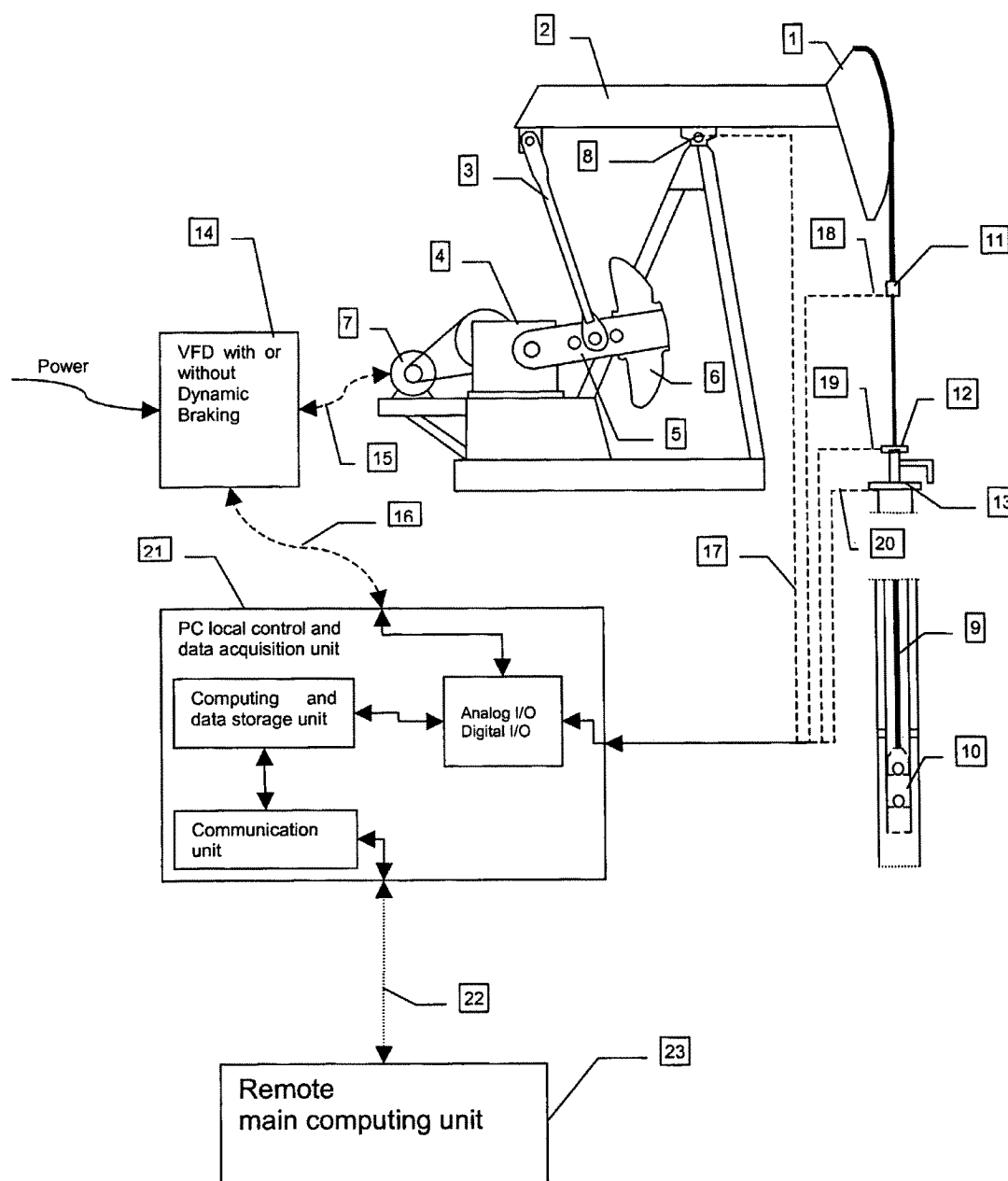
Family 37/100 - FAMPAT - ©Questel

Title

(US9033676)

Method and system for optimizing downhole fluid production

Images



Publication numbers with kind code & date

US9033676

B2 2015-05-19 US9033676



US20130151216

A1 2013-06-13 US20130151216

Abstract

(US20130151216)

A method and system for pumping unit with an elastic rod system is applied to maximize fluid production. The maximum stroke of the pump and the shortest cycle time are calculated based on all static and dynamic properties of downhole and surface components without a limitation to angular speed of the prime mover. Limitations of structural and fatigue strength are incorporated into the optimization calculation to ensure safe operation while maximizing pumped volume and minimizing energy consumption. Calculated optimal prime mover speed is applied to the sucker rod pump by means of beam pumping, long stroke or hydraulic pumping unit by controlling velocity, acceleration and torque of the electric prime mover or by controlling pressure and flow rate in hydraulically actuated sucker rod pumping system.

Inventors

PALKA KRZYSZTOF

CZYŻ JAROSŁAW A

Latest standardized assignees - inventors removed

AMBYINT

Family 38/100 - FAMPAT - ©Questel

Title

(US6031294)

Turbogenerator/motor controller with ancillary energy storage/discharge

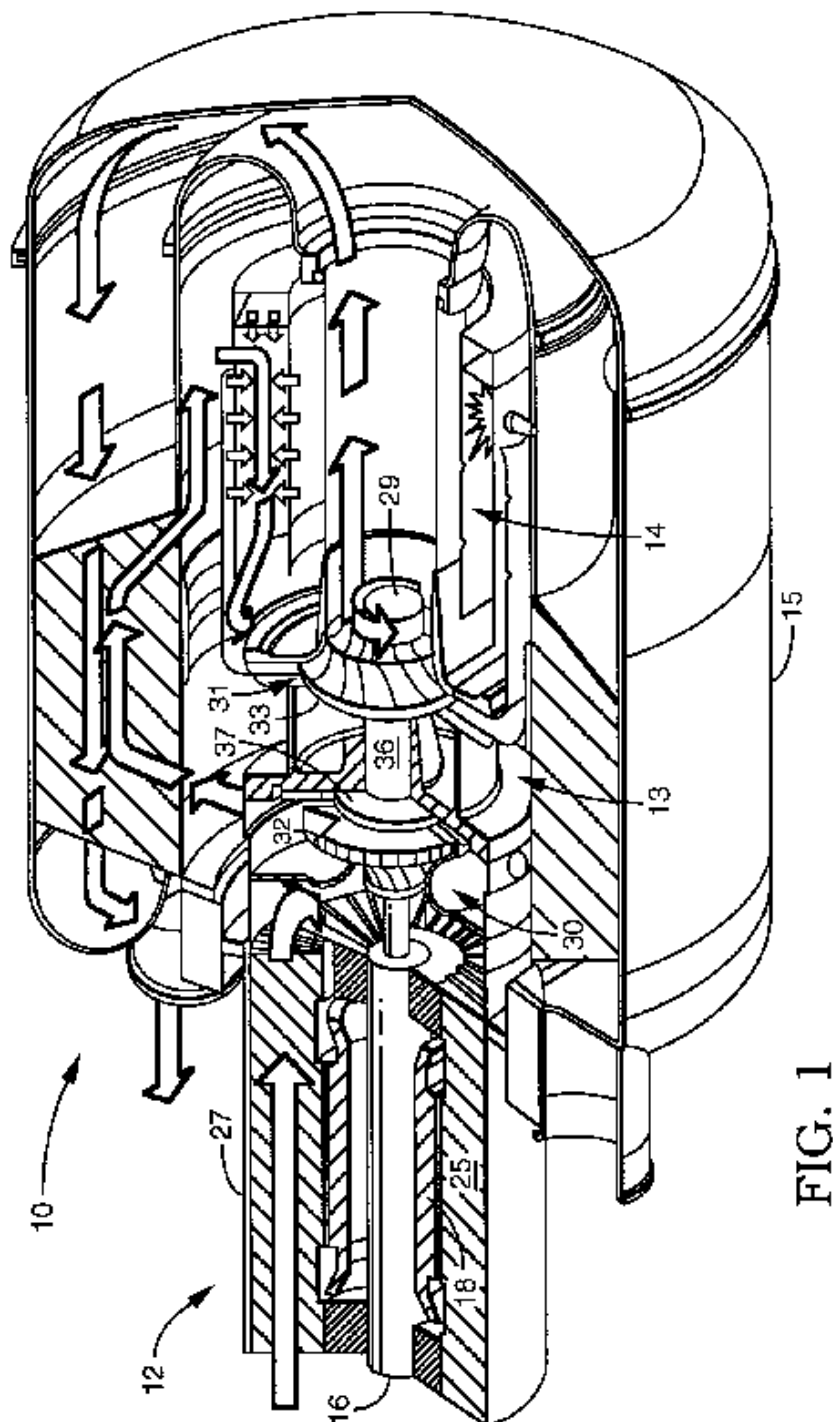
Images

FIG. 1

Publication numbers with kind code & date

US6265786 B1 2001-07-24 US6265786

US6031294 A 2000-02-29 US6031294

**Abstract**

(US6031294)

A turbogenerator/motor controller with a microprocessor based inverter having multiple modes of operation with an energy storage and discharge system including an ancillary electric storage device, such as a battery, connected to the generator controller through control electronics. Electrical energy can flow from the ancillary electric storage device to the turbogenerator controller during start up and increasing load and vice versa during self-sustained operation of the turbogenerator. When utility power is unavailable, the ancillary electric storage device can provide the power required to start the turbogenerator. When a load transient occurs, the gas turbine engine and the ancillary electric storage device provide the power required to successfully meet the transient.

Inventors

GEIS EVERETT R

PETICOLAS BRIAN W

WACKNOV JOEL B

Latest standardized assignees - inventors removed

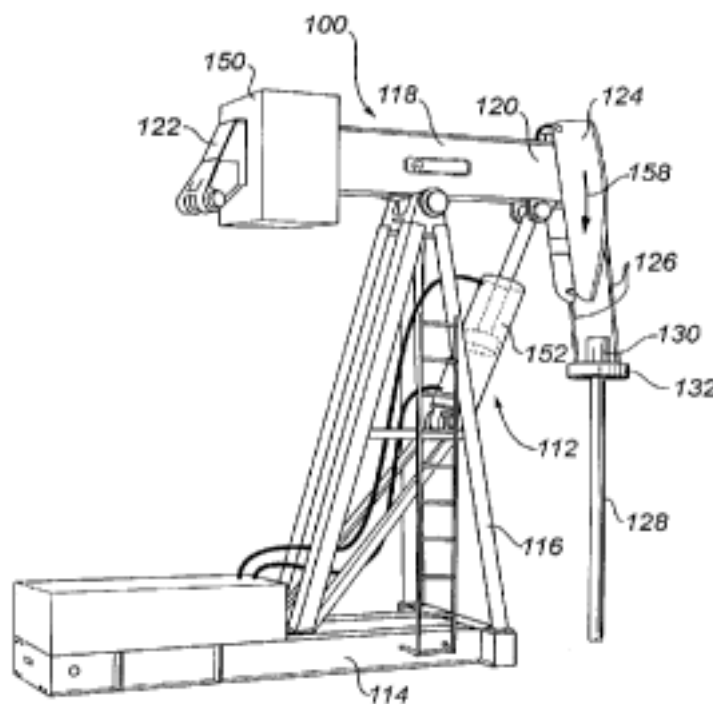
CAPSTONE TURBINE

Family 39/100 - FAMPAT - ©Questel

Title

(CA2227707)

Control apparatus for a pump

Images**Publication numbers with kind code & date**[CA2227707](#)

A1 1999-07-21 CA2227707

**Abstract**

(CA2227707)

A control apparatus for a pump includes hydraulic cylinders connected to the pump. Movement of pistons within the hydraulic cylinders between extended and retracted positions provide motive force to the pump. A drive motor is provided with a rotary output shaft on which is mounted a cam. A control valve has an actuator arm which engages the cam. When the actuator arm is in a first position hydraulic fluid is supplied to the hydraulic cylinders to moving the piston to an extended position. When the actuator arm is in a second position hydraulic fluid is supplied to the hydraulic cylinders to

US20080240930	A1	2008-10-02	US20080240930
WO2007/041823	A8	2007-09-13	WO200741823
WO2007/041823	A1	2007-04-19	WO200741823
CA2526345	A1	2007-04-13	CA2526345



Abstract

(WO2007/041823)

A method and system for pumping unit with an elastic rod system is applied to maximize fluid production. The maximum stroke of the pump and the shortest cycle time are calculated based on all static and dynamic properties of downhole and surface components without a limitation to angular speed of the prime mover. Limitations of structural and fatigue strength are incorporated into the optimization calculation to ensure safe operation while maximizing pumped volume and minimizing energy consumption. Calculated optimal prime mover speed is applied to the sucker rod pump by means of beam pumping, long stroke or hydraulic pumping unit by controlling velocity, acceleration and torque of the electric prime mover or by controlling pressure and flow rate in hydraulically actuated sucker rod pumping system.

Inventors

PALKA KRZYSZTOF

CZYŻ JAROSŁAW A

Latest standardized assignees - inventors removed

PUMPWELL SOLUTIONS

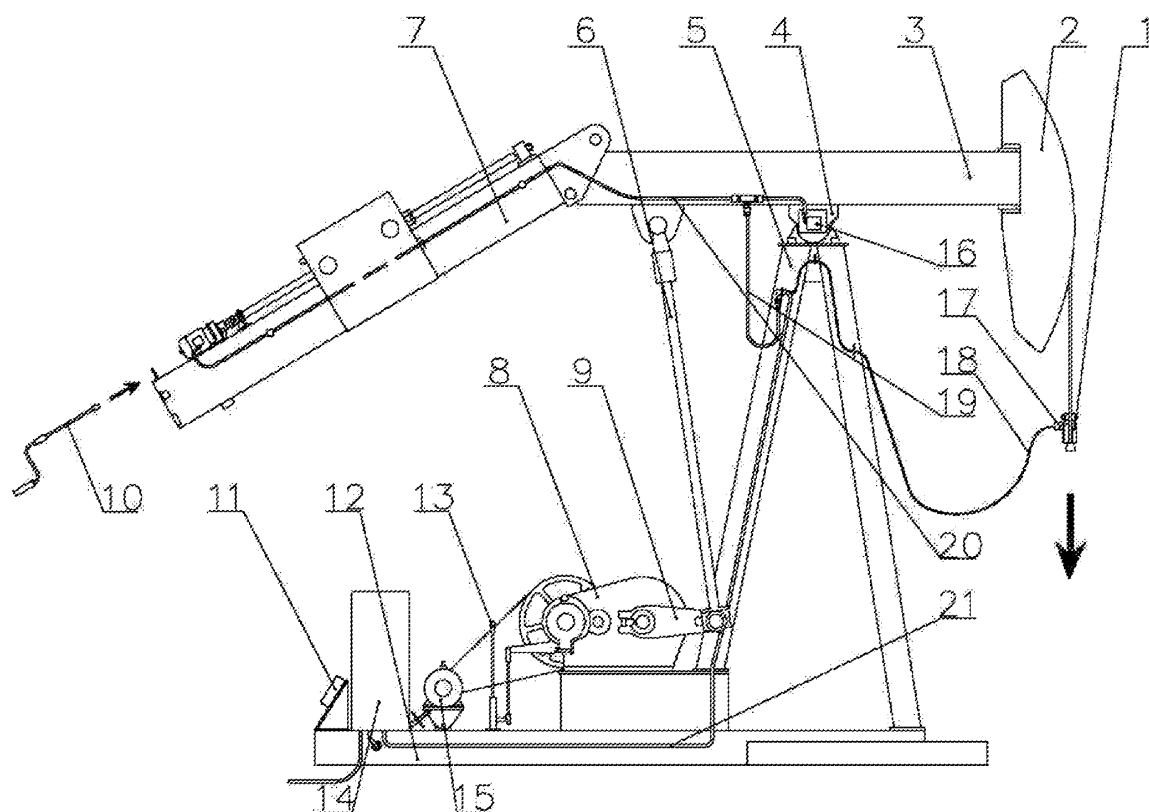
Family 41/100 - FAMPAT - ©Questel

Title

(WO2016107593)

Digitized automatically controlled oil-pumping method and balance-shifting digitized pumpjack

Images



Publication numbers with kind code & date

CN104563970	B	2018-04-03	CN104563970B
US20170298923	A1	2017-10-19	US20170298923
WO2016/107593	A1	2016-07-07	WO2016107593



CN104563970

A

2015-04-29

CN104563970

**Abstract**

(WO2016/107593)

Disclosed are a digitized automatically controlled oil-pumping method and a balance-shifting digitized pumpjack, said pumpjack comprising a main engine (15), a decelerator (8), a crank (9), a connecting rod (6), a walking beam (3), a balance arm (7), a derrick (5), a counterweight (2), a base (12), brake equipment (13), a wireline (1), a load sensor (17), a stroke measurer, a safety stop device, and a digital control box (14). A movable counterweight box (28) travels left and right on the balance arm (7), automatically balancing load at the point of suspension, and pump stroke is automatically adjusted according to variations in pump fill-height. Features include safety and reliability, convenience of operation, enhanced oil well production and balance rates, energy economies and reduced consumption.

Inventors

GAO CHANGLE

YU SHENG CUN

LI NINGHUI

WANG KANGJUN

MA SHUJIAN

JI XIAOKE

ZHU JIAQIANG

ZHANG JING

LIN QUAN

DONG HONGYU

Latest standardized assignees - inventors removed

XINJIANG UYGUR AUTONOMOUS REGION NO 3 MACHINE TOOL WORKS

Family 42/100 - FAMPAT - ©Questel

Title

(EP2917472)

Apparatus and method of referencing a sucker rod pump

Images

AR093385	A1	2015-06-03	AR--93385				
AU2013341473	A1	2015-05-21	AU2013341473				
BR112015010330	A1	2015-05-19	BR112015010330				
CA2890587	A1	2014-05-15	CA2890587				
WO2014/074434	A1	2014-05-15	WO201474434				
US20140129037	A1	2014-05-08	US20140129037				

Abstract

(EP2917472)

There is provided a method and system to determine the position of a sucker rod pumping system without a position sensing device during production pumping. A pump control system of the sucker rod pumping system includes a controller coupled to a database, with the controller configured to access an rxless torque value in the database. With the stored rxless torque value representative of toggle points of the crank arm during an initial calibration pumping cycle, the controller further is configured to continuously sample the rxless torque value of the system and determine the crank arm position in relation to the sample rxless torque value. The controller adjusts the pumping system for optimal operations, without a crank arm position sensor during production pumping by identifying a toggle point and setting the crank arm position estimate equal to the value corresponding to the crank position at the identified toggle point.

Inventors

PETERSON RONALD G

Latest standardized assignees - inventors removed

UNICO

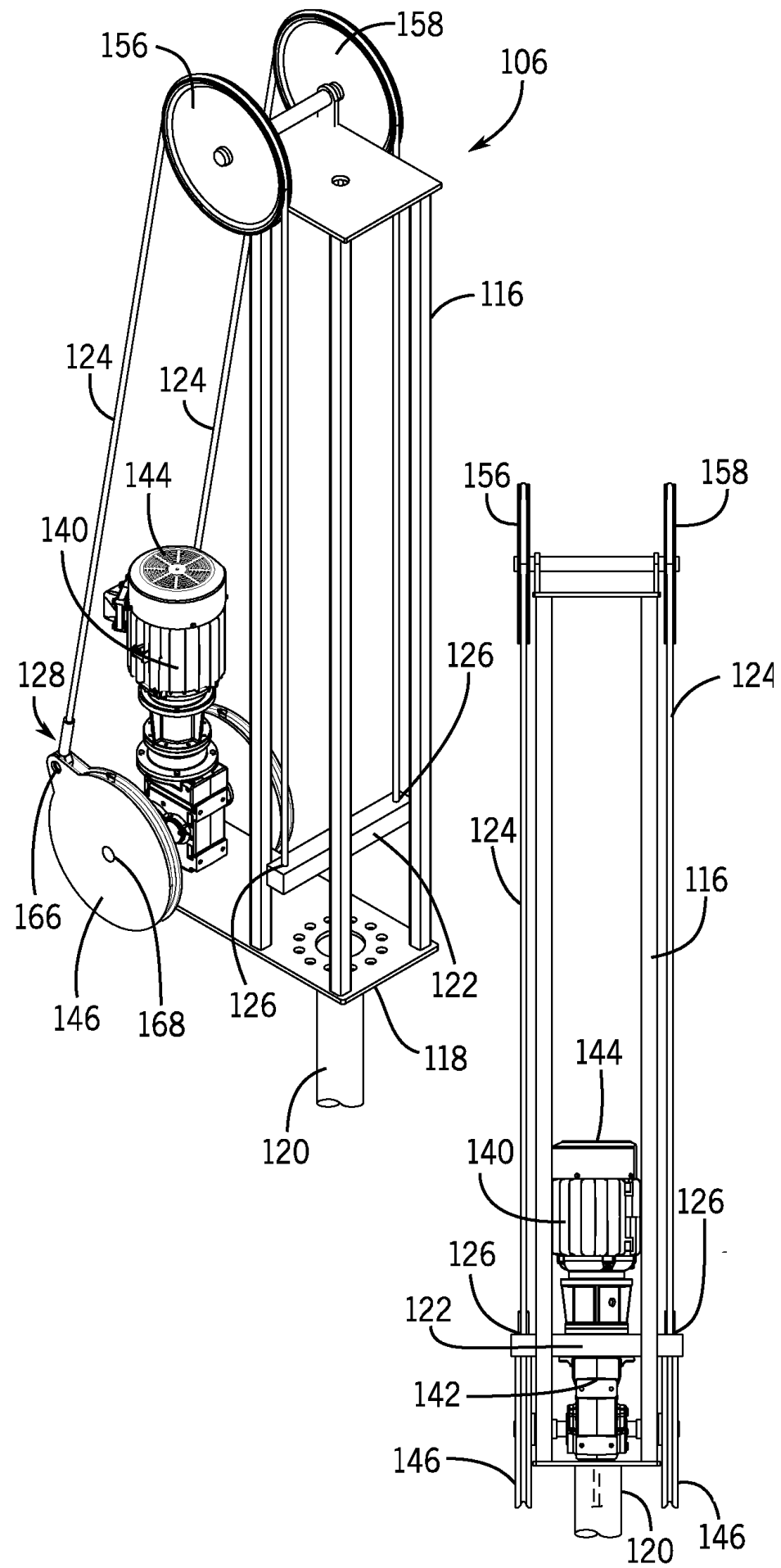
Family 43/100 - FAMPAT - ©Questel

Title

(EP2971771)

Winched rod pump apparatus and method

Images



Publication numbers with kind code & date

BR112015018814	A2	2017-07-18	BR112015018814				
EP2971771	A4	2016-09-28	EP2971771				
CA2897325	C	2016-05-10	CA2897325				
MX2015009517	A	2016-03-03	MX2015009517				
EP2971771	A1	2016-01-20	EP2971771				
EA201500762	A1	2015-12-30	EA201500762				
CO7461146	A2	2015-11-30	CO7461146				
AR095314	A1	2015-10-07	AR--95314				
BR112015018814	A1	2015-08-18	BR112015018814				
AU2014237827	A1	2015-07-23	AU2014237827				
CA2897325	A1	2014-09-25	CA2897325				
WO2014/149758	A1	2014-09-25	WO2014149758				
US20140271260	A1	2014-09-18	US20140271260				

Abstract

(EP2971771)

An apparatus and method for pumping fluids with a winched rod pumping apparatus for imparting reciprocating substantially vertical motion to a rod of a sucker-rod pump. A winched rod pumping apparatus, includes a motor driven winch drum and cable mechanical actuator arrangement. The winch drum and cable mechanical actuator arrangement includes a substantially vertically moveable member attached to the rod of the sucker-rod pump. The vertical moveable member is coupled to one end of the cable and the other end of the cable is coupled to the winch drum. The winch drum is configured to rotate in one direction to index the rod in a vertical up direction and to index the rod in a vertical down direction, with the winch drum completing at least one full rotation and the rod completing one cycle. The rod cycle is in relation to a pumping cycle for the down hole pump.

Inventors

GREGORY BENJAMIN J

BECK THOMAS L

PETERSON RONALD G

MACDONALD MICHAEL A

Latest standardized assignees - inventors removed

UNICO

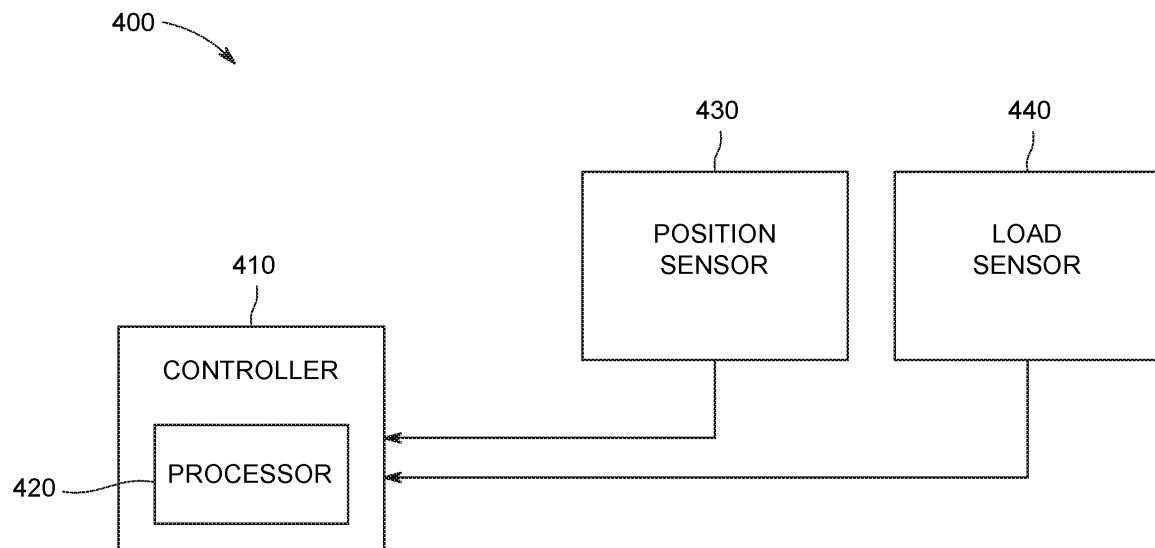
Family 44/100 - FAMPAT - ©Questel

Title

(WO2017100669)

Controller for a rod pumping unit and method of operation

Images

**Publication numbers with kind code & date**

IN201847021467	A	2018-06-15	IN201847021467
CA3006978	A1	2017-06-15	CA3006978
US20170167482	A1	2017-06-15	US20170167482
WO2017/100669	A1	2017-06-15	WO2017100669

**Abstract**

(WO2017/100669)

A controller for operating a rod pumping unit includes a processor configured to operate the rod pumping unit at a pumping profile speed. The processor is further configured to compute a first downhole dynamometer card from surface measurements at the rod pumping unit. The processor is further configured to compute a second downhole dynamometer card from the surface measurements. The processor is further configured to validate at least one of the first downhole dynamometer card and the second downhole dynamometer card based on a rod pumping unit condition.

Inventors

AL ASSAD OMAR

SIVARAMAKRISHNAM SHYAM

SINGAL KALPESH

BARTON JUSTIN EDWIN

Latest standardized assignees - inventors removed

GENERAL ELECTRIC

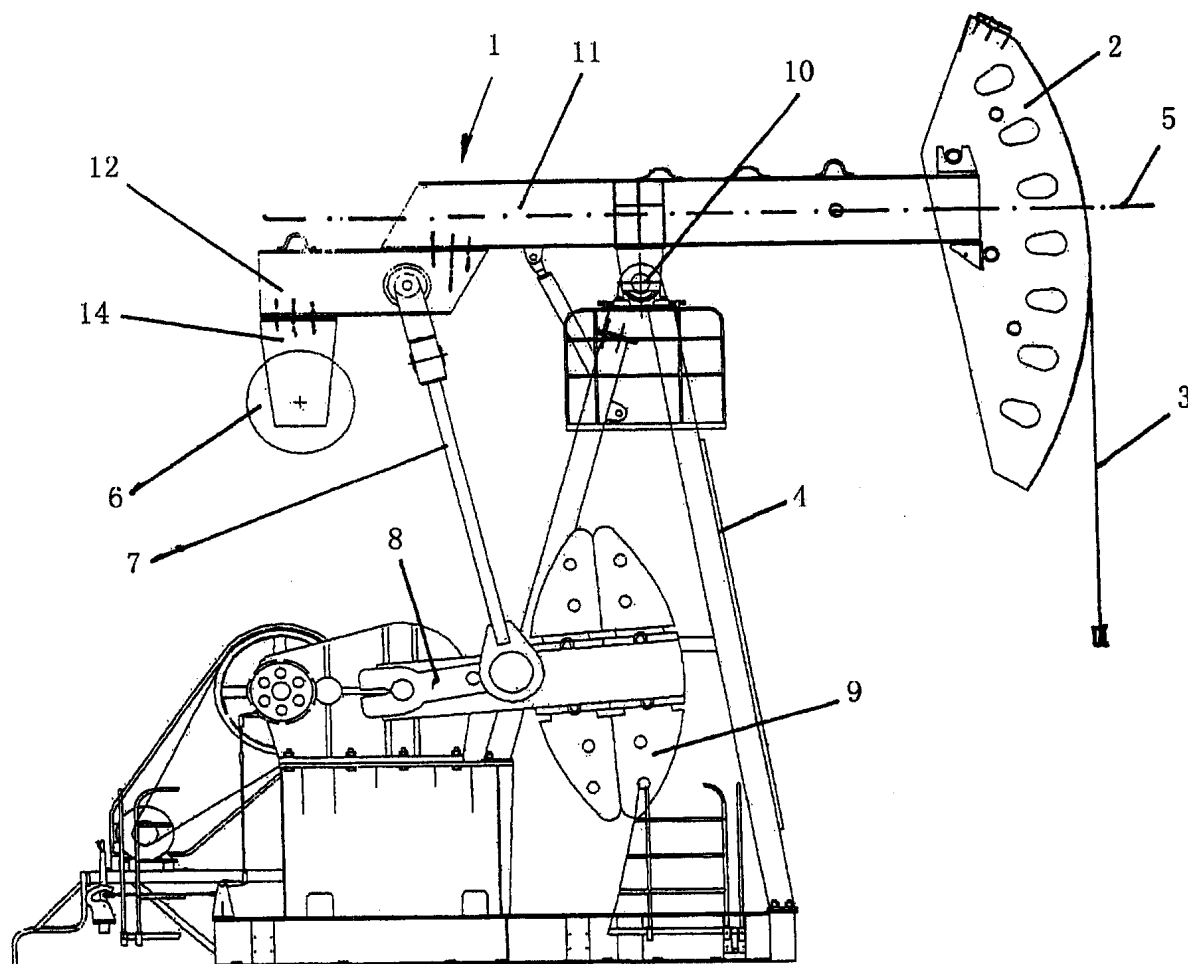
Family 45/100 - FAMPAT - ©Questel

Title

(CN2890412U)

Pumping device for oil well

Images



Publication numbers with kind code & date

CA2580293	C	2009-12-15	CA2580293
CA2580293	A1	2007-09-08	CA2580293
CN2890412	Y	2007-04-18	CN2890412U



Abstract

(CN2890412)

The utility model of a pumping device for oil well comprises a power mechanism, a crank web which is connected to the power mechanism through a transmission mechanism, the crank web can rotate around a stationary axle line on one end, a crank balancing weight, which is installed on the crank web and separated from the stationary axle line, a walking beam, which is supported by a pedestal pivotably, a walking beam balancing weight which is installed on the walking beam, and a connection rod, one end of the connection rod is articulated on the crank web, the other end is articulated to the walking beam and the walking beam comprises a part 1 and part 2 mutually connected.

Inventors

ZHANG ZHIPING

GUO ZHAOYONG

Latest standardized assignees - inventors removed

TIANJIN RING TOP PETROLEUM MAN

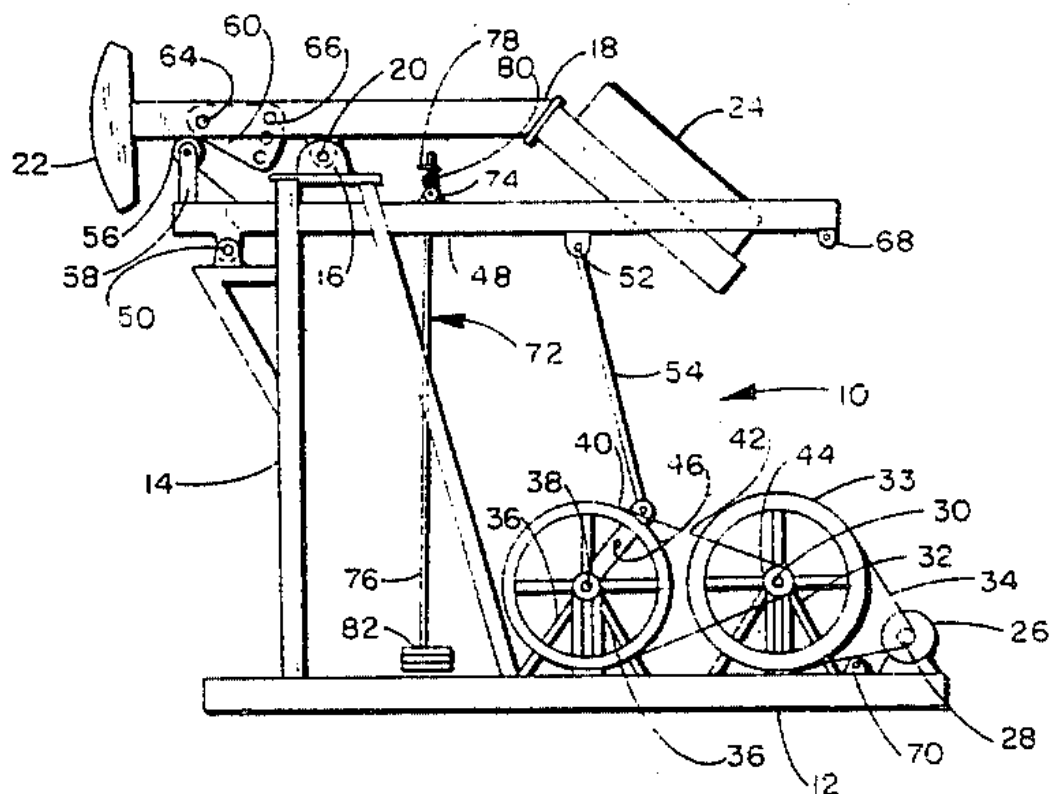
Family 46/100 - FAMPAT - ©Questel

Title

(US4492126)

Variable leverage oil field pump jack

Images

**Publication numbers with kind code & date**[US4492126](#)

A

1985-01-08

US4492126

**Abstract**

(US4492126)

In a heavy-duty pump jack as used in oil well pumping, a leverage beam is oscillated by a motor-driven crank and the leverage beam acts upon the walking beam through an adjustable stroke controller.

Inventors

DAVIS C ARTHUR

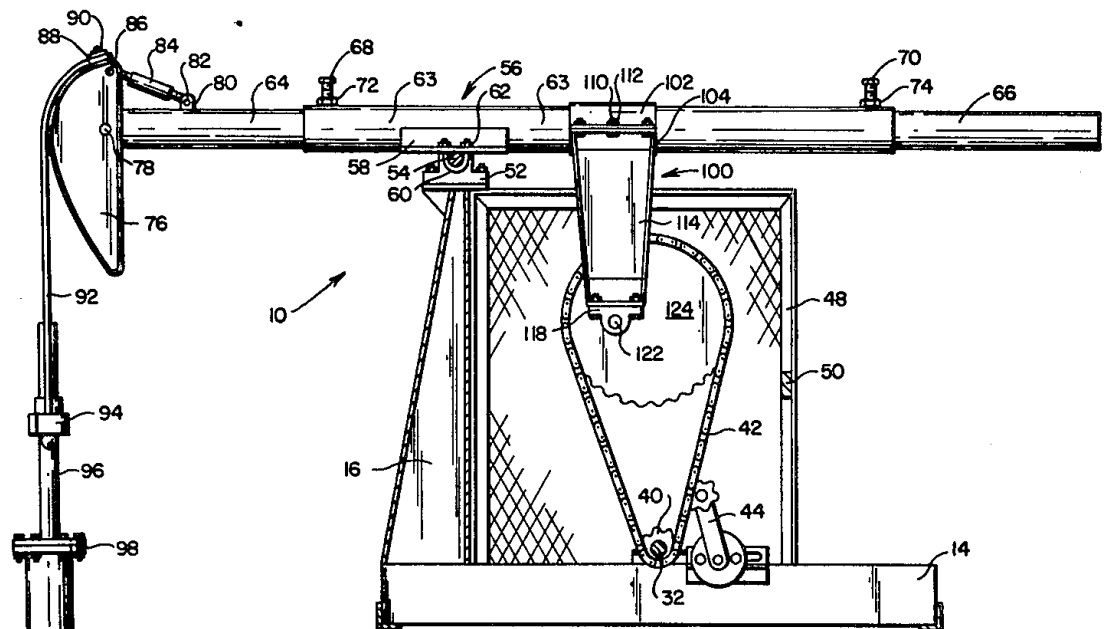
Family 47/100 - FAMPAT - ©Questel

Title

(US4461187)

Pump jack

Images

**Publication numbers with kind code & date**

US4461187 A 1984-07-24 US4461187

**Abstract**

(US4461187)

A pump jack comprises a rocker arm one end of which is fixed to the upper end of a sucker rod. The other limb of the rocker arm has rigidly affixed thereto a downwardly-extending drive support member and a large driven pinion is eccentrically and rotatably mounted at the lower end of this drive support member. The driven pinion is engaged by a chain, which also passes around a driving pinion fixed to the base of the pump jack. This drive arrangement reduces the acceleration and shock loadings imposed upon the sucker rod at the beginning of its upstroke and reduces the size and cost of the gearbox necessary to connect a prime mover to the driving pinion.

Inventors

STANTON GEORGE E

Latest standardized assignees - inventors removed

NUJACK OIL PUMP

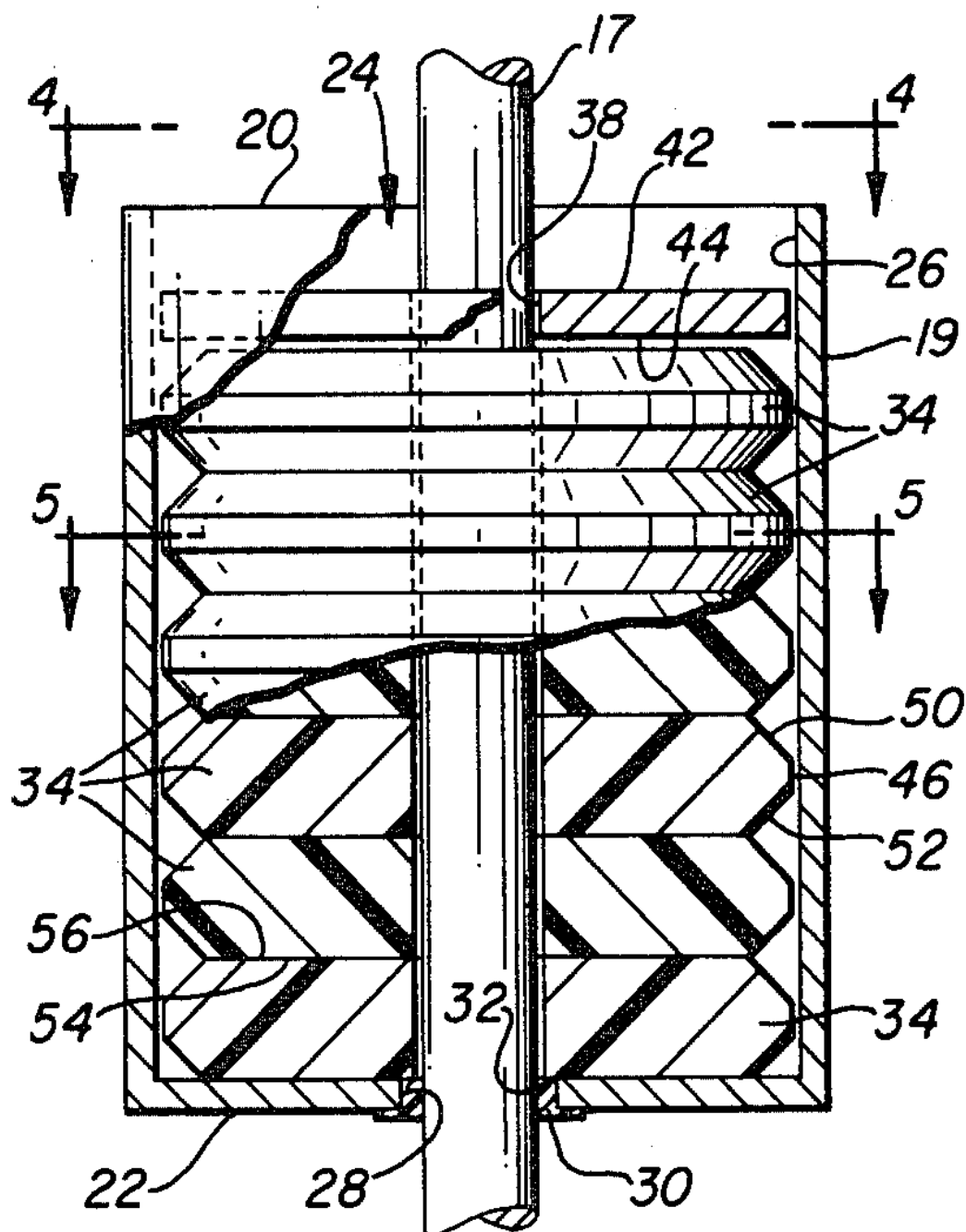
Family 48/100 - FAMPAT - ©Questel

Title

(US4354397)

Sucker rod shock absorber

Images



Publication numbers with kind code & date

US4354397

A 1982-10-19 US4354397



Abstract

(US4354397)

A shock absorber apparatus connected in series relationship respective to the polished rod and bridle of a pumpjack unit. The shock absorber includes a housing within which there is supported a plurality of resilient packer members stacked in sandwiched relationship. The packer members have an axial passageway formed therethrough, with the passageway of each packer member being aligned with one another, so that the polished rod is telescopingly received therethrough. The bottom of the housing is supported by the bridle, while the polished rod is supported by a plate member which bears against the uppermost packer member. This places all of the resilient packer members in compression, with the force of the compression being proportional to the weight of the sucker rod.

Inventors

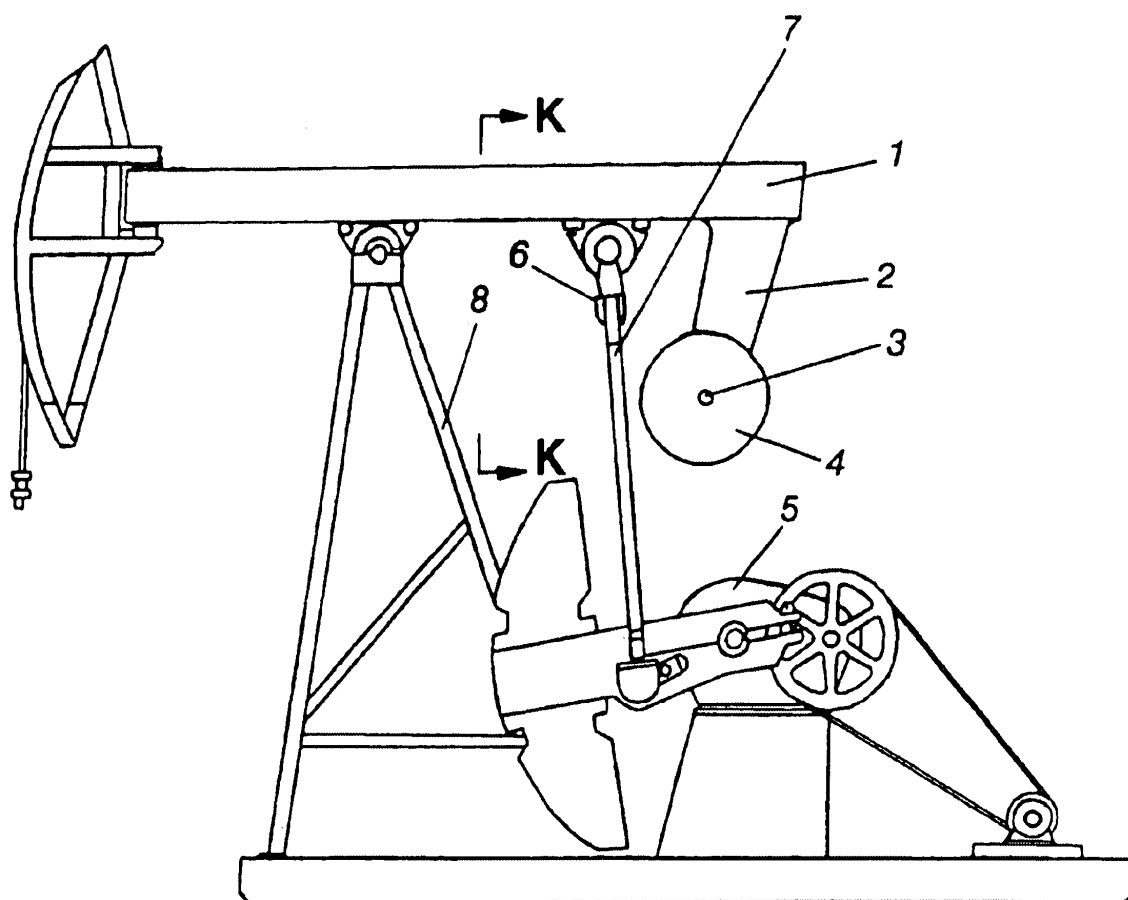
FIX PAUL W

Family 49/100 - FAMPAT - ©Questel

Title

(US6655224)

Downward offset barbell type walking beam compositively balance oil pump

Images**Publication numbers with kind code & date**[US6655224](#)

B1 2003-12-02 US6655224

**Abstract**

(US6655224)

A downward offset barbell type walking beam compositively balance oil pump, in which at the rear end of the walking beam is mounted a downward offset barbell type balancing device consisting of a shoe plate, a cross shaft and balancing pieces, retains most of the structure of the conventional walking beam oil pump, and has a compact structure, a wide range of moment change, an advantage of saving electricity to a degree of more than 40 percent, and is safe and reliable for operation. The present invention can be applied to the renovation of variety of conventional walking beam oil pumps, used in oil fields, outphase crankshaft oil pumps and walking beam compositively balance oil pumps for the purpose of energy-saving or of promotion of the capacity for oil extraction of the above-mentioned oil pumps.

Inventors

JI XIANGYUN

YU SHENGUN

LUO RENQUAN

ZHAO WEIDONG

WEI YUZHEN

ZHANG WUANJIAN

Latest standardized assignees - inventors removed

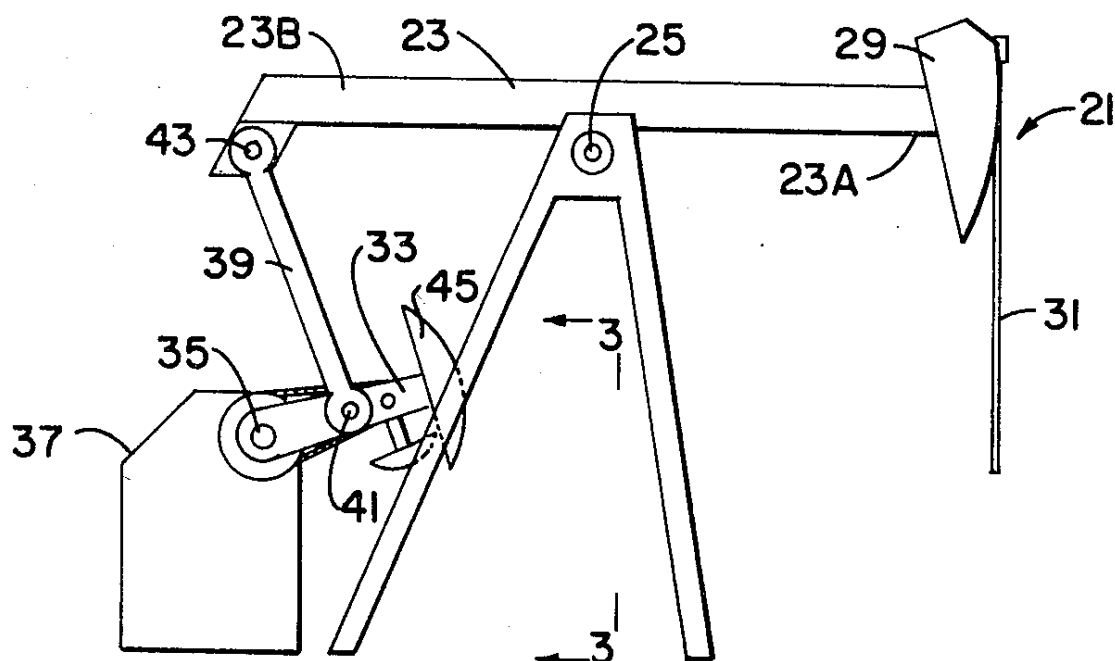
NO 3 MACHINE TOOL PLANT OF THE XINJIANG

Family 50/100 - FAMPAT - ©Questel

Title

(US4321837)

Auxiliary counter balance for well pump

Images**Publication numbers with kind code & date**[US4321837](#)

A

1982-03-30

US4321837

**Abstract**

(US4321837)

A well pump having a walking beam operated by a pitman and crank, the latter of which has a main counter weight connected to its end for counter balancing the weight of the rod string and one-half of the weight of the fluid pumped. An auxiliary counter weight is coupled to the crank between its driving shaft and the main counter weight and is rotated relative to the crank to aid in counter balancing the remaining portion of the fluid pumped.

Inventors

GRIGSBY ROY E

Family 51/100 - FAMPAT - ©Questel

Title

(WO201953513)

Oil-well pump instrumentation device and surface card generation method

Images

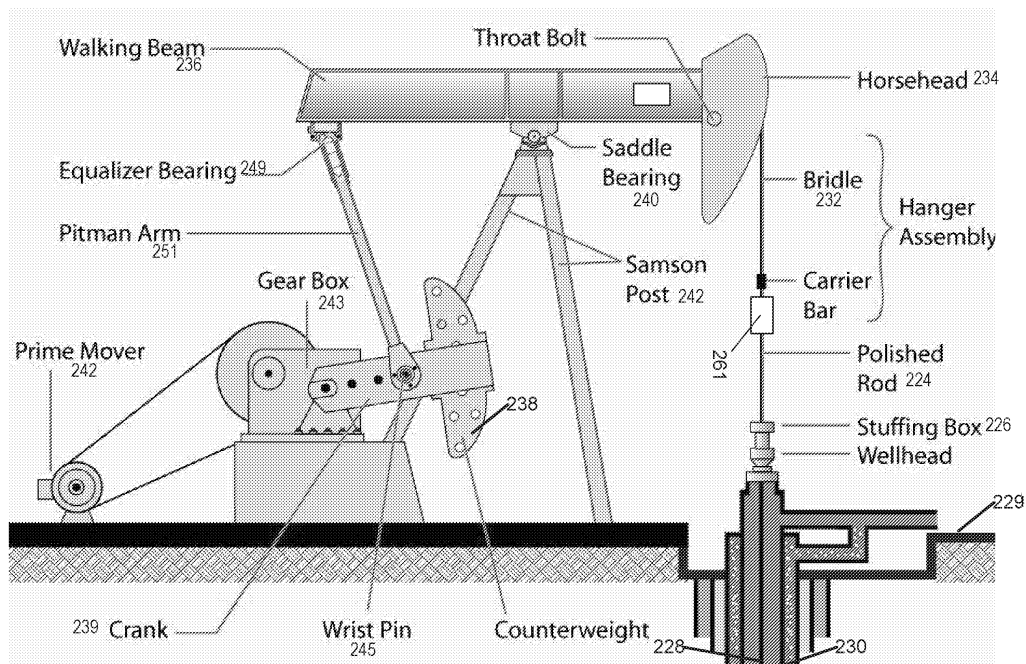


FIG. 2

Publication numbers with kind code & date

WO2019/053513	A9	2019-06-27	WO201953513
WO2019/053513	A1	2019-03-21	WO201953513



Abstract

(WO2019/053513)

A pumpjack monitor includes a processor and memory, a communicator for communicating with other monitors and a server, a sensor module having at least a strain gauge and accelerometers for determining vibration and position of the monitor. Other sensors may be internal, including sensors for polished rod rotation, or gas, or external and linked to the monitoring device wirelessly. Some embodiments serve as network hubs or bridges for other monitors. The server is configured to generate surface cards. A method for monitoring of pumpjacks uses the monitor to sense changes in pumpjack parameters, and communicate the changes to a server when changes exceed configurable thresholds. Some embodiments include determining location with GPS and/or relaying signals from other monitoring devices, smart power management, gas sensing, and relaying of signals from external wireless-equipped sensors such as valve position sensors, oil level sensors, and pressure sensors.

Inventors

FYFE KELLY

FYFE KIPLING

WILLIAMS THOMAS

Latest standardized assignees - inventors removed

4III INNOVATIONS

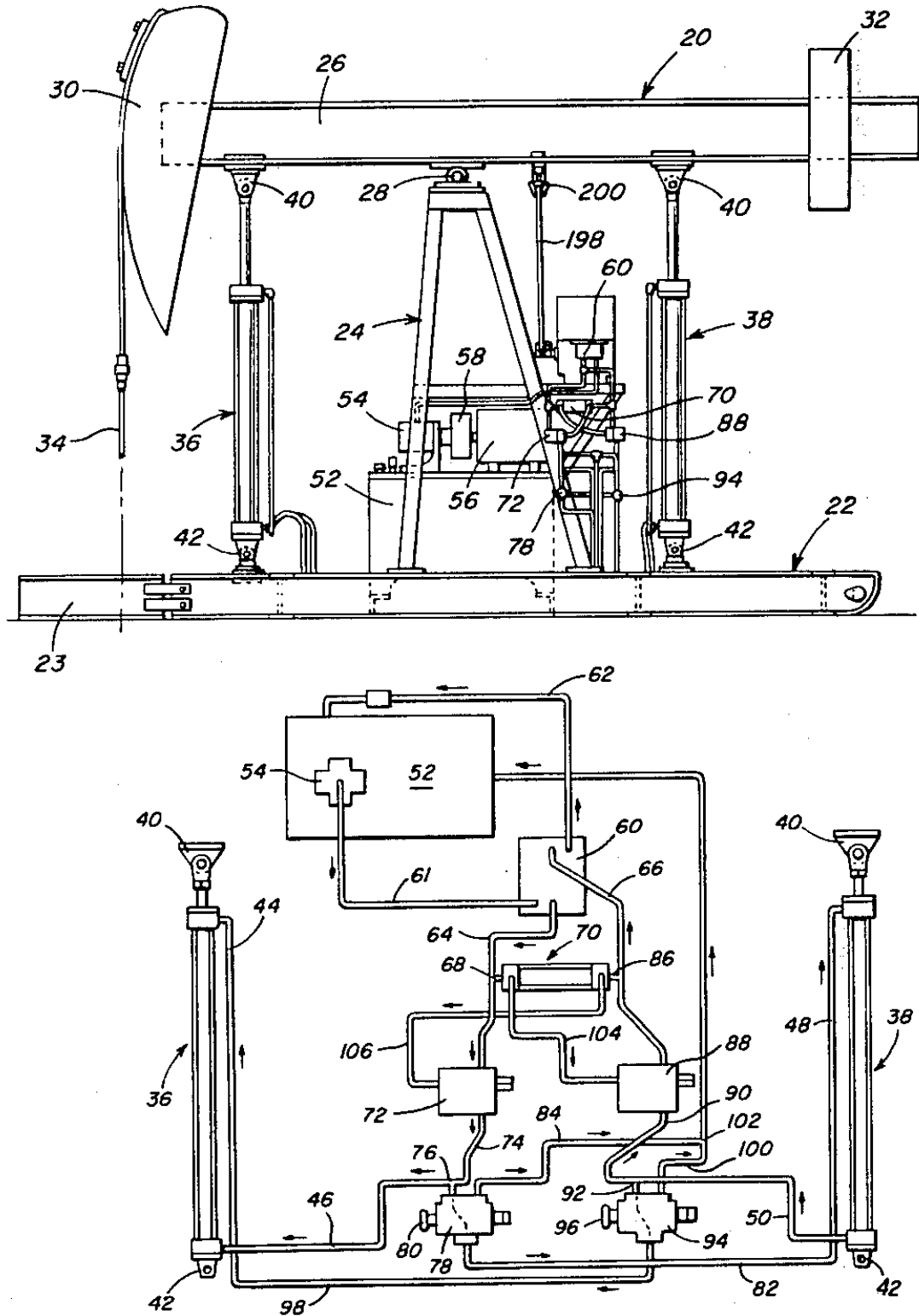
Family 52/100 - FAMPAT - ©Questel

Title

(US4381695)

Hydraulically operated pump jack with holding valves and control assembly

Images



Publication numbers with kind code & date

US4381695

A 1983-05-03 US4381695



Abstract

(US4381695)

A hydraulically operated pump jack utilizing dual hydraulically operated piston and cylinder assemblies for pivoting the beam of the pump jack and including a unique control arrangement associated with a reversing valve for controlling operation of the piston and cylinder assemblies. The control arrangement includes a hydraulically operated holding valve incorporated into each of the conduits between the reversing valve and the hydraulically operated piston and cylinder assemblies combined with a control piston and cylinder assembly for controlling the operation of the holding valves. A manually operated valve assembly is also incorporated into each conduit to enable conversion of either or both of the

piston and cylinder assemblies from double acting to single acting. The control arrangement also includes a unique mechanism for operating the reversing valve automatically with this mechanism including a structure enabling manual disengagement of the automatic operating mechanism for the reversing valve with the reversing valve being capable of manual operation after such disengagement.

Inventors

OGLES ETHRIDGE F

Latest standardized assignees - inventors removed

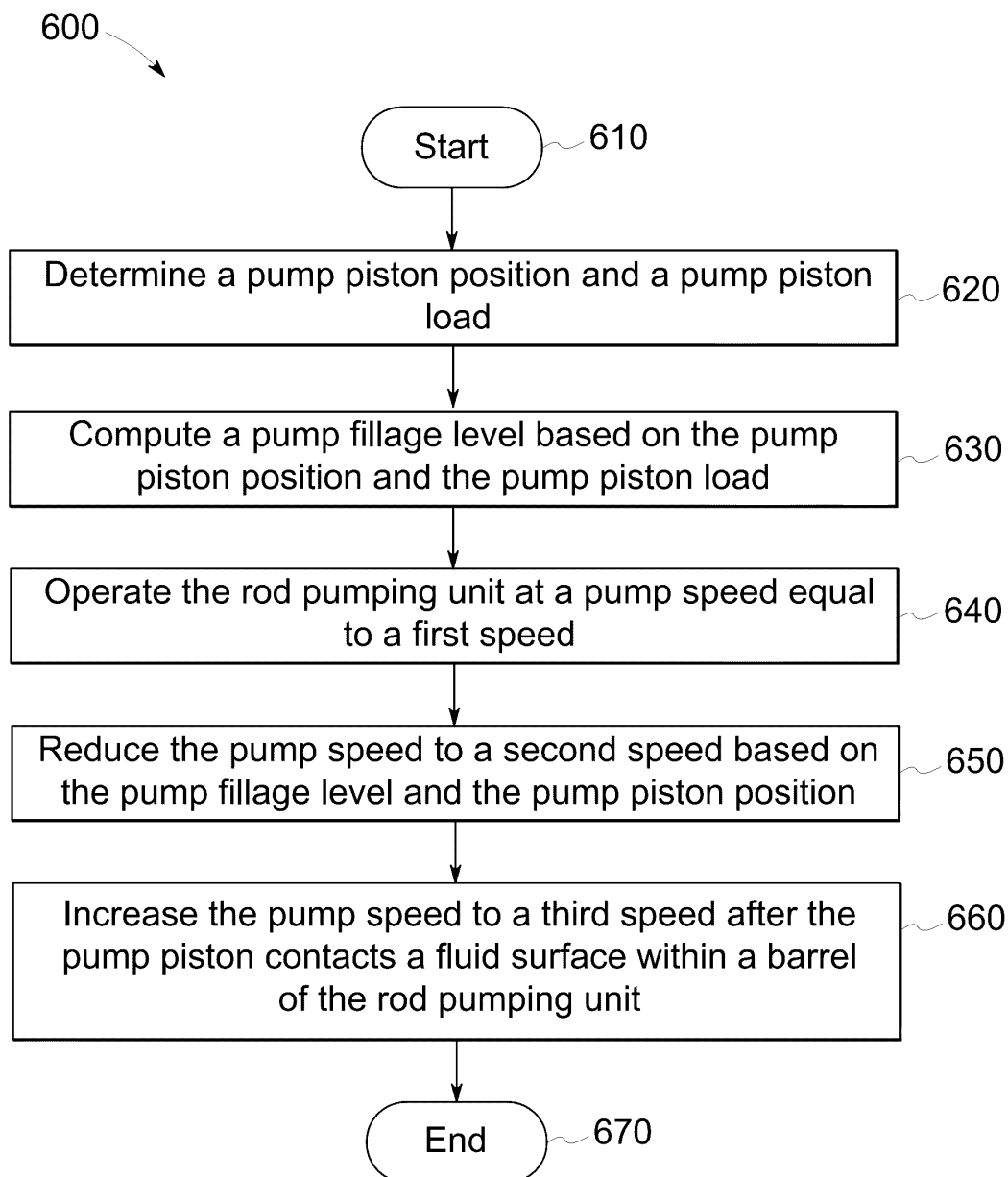
KOPCYNski WINK H ADA

Family 53/100 - FAMPAT - ©Questel

Title

(US20170037845)

Controller and method of controlling a rod pumping unit

Images**Publication numbers with kind code & date**

US20170037845	A1	2017-02-09	US20170037845
CA2938205	A1	2017-02-06	CA2938205
MX2016010244	A	2017-02-06	MX2016010244

**Abstract**

(US20170037845)

A controller for operating a rod pumping unit at a pump speed. The controller includes a processor configured to operate a pump piston of the rod pumping unit at a first speed. The processor is further configured to determine a pump fillage level for a pump stroke based on a position signal and a load signal. The processor is further configured to reduce the pump speed to a second speed based on the pump fillage level for the pump stroke.

Inventors

AL ASSAD OMAR

BLOM ROGIER SEBASTIAAN

HUGHES GARY

BARTON JUSTIN EDWIN

WESTERKAMP PETER

Latest standardized assignees - inventors removed

GENERAL ELECTRIC

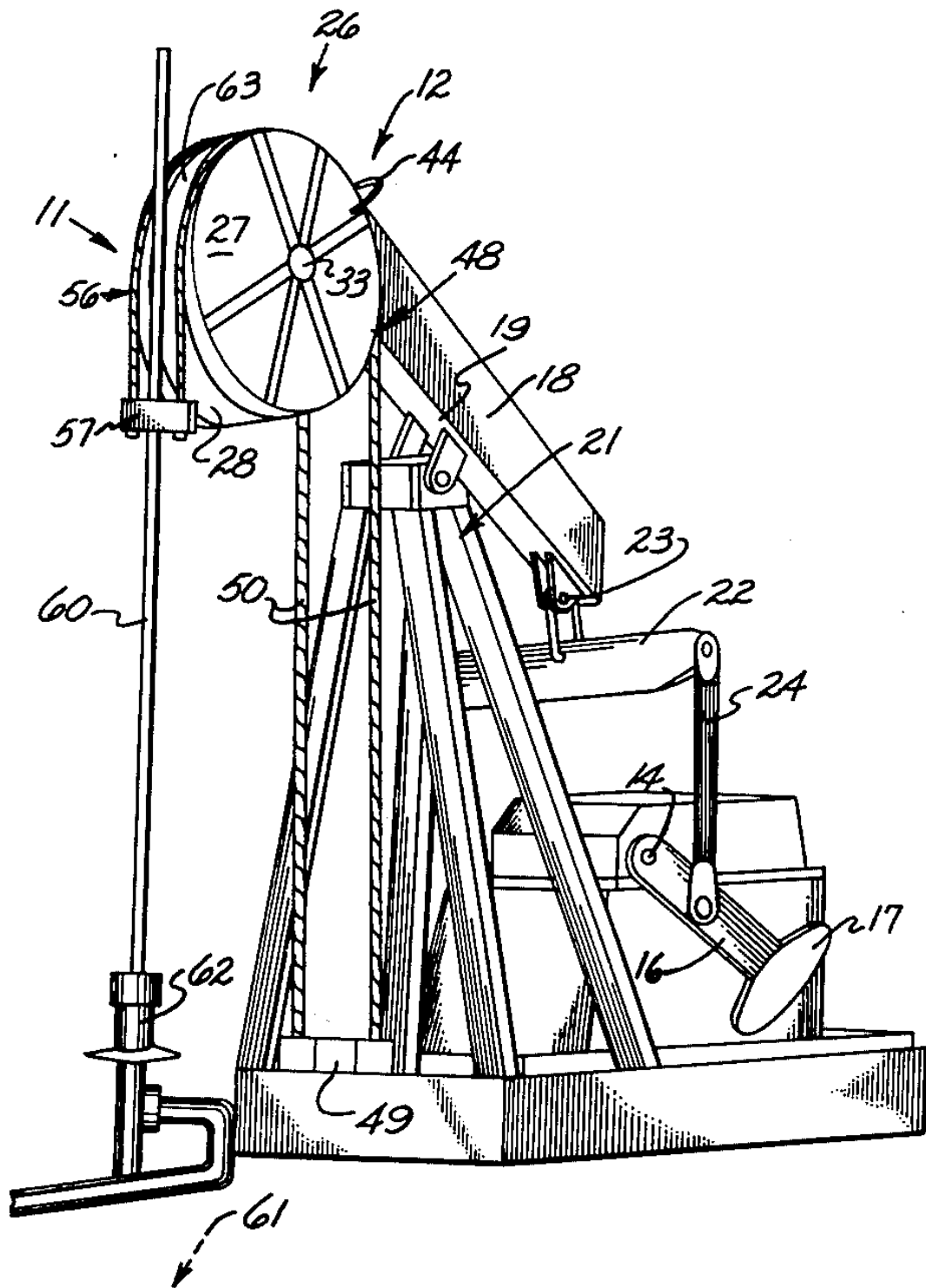
Family 54/100 - FAMPAT - ©Questel

Title

(US4121471)

Rotating horsehead for oilfield pumping unit

Images



Publication numbers with kind code & date

US4121471 A 1978-10-24 US4121471



Abstract

(US4121471)

A generally elliptical wheel is rotatably attached to the walking beam of an oilfield pumping unit in substantially the same position as a conventional horsehead. A polished rod cable sling is attached at one end to a polished rod hanger, the other end of the rod cable being trained over the front circumferential portion of the wheel and attached to an upper portion thereof. An anchor cable sling is attached at one end to a ground anchor located below the wheel, the other end of the anchor cable being trained over the back circumferential portion of the wheel and attached to the upper portion thereof. Rotation of the elliptical wheel in opposite directions on the upward and the downward movement of the walking beam causes the stroke of the polished rod to exceed the extent of movement of the walking beam by a substantial amount.

The shape of the wheel is selected so that the torque exerted on the wheel by the polished rod cable is substantially equal and opposite to that exerted by the anchor cable at all positions of the wheel.

Inventors

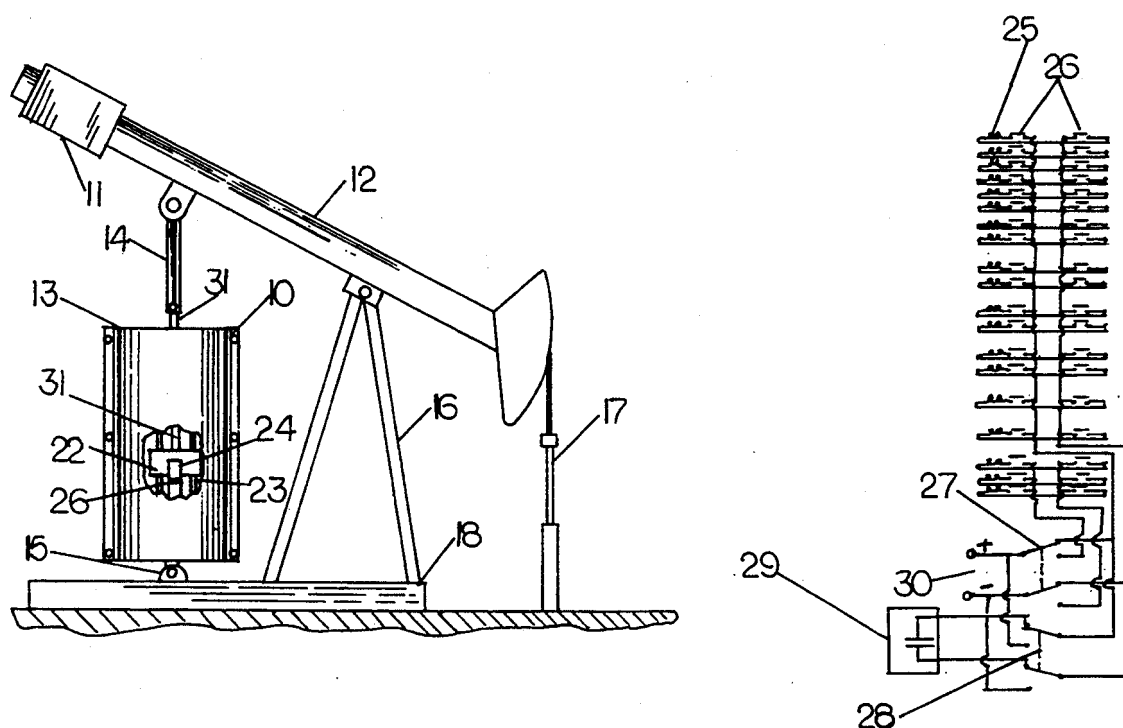
CHANCELLOR FORREST E

Family 55/100 - FAMPAT - ©Questel

Title

(US5409356)

Well pumping system with linear induction motor device

Images**Publication numbers with kind code & date**

US5409356 A 1995-04-25 US5409356

**Abstract**

(US5409356)

Fluid wells, particularly oil wells, exert heavy shock loads on the string of sucker rods extending down to the fluid pump located adjacent to the producing formation. A conventional rocker arm must lift the sucker rods the column of oil in the casing plus the weight of the fluid pump, overcome the inertial load and then come to a stop before reversing the stroke. The employment of linear induction motors to reciprocate the oil well rocker arm and then operate as a generator on the reverse stroke reduces the shock loading and the returns the generated electrical energy to the well pumping system. The instant invention greatly reduces the maintenance costs of a conventional oil well and provides greater efficiency of the well pumping system.

Inventors

MASSIE LEWIS E

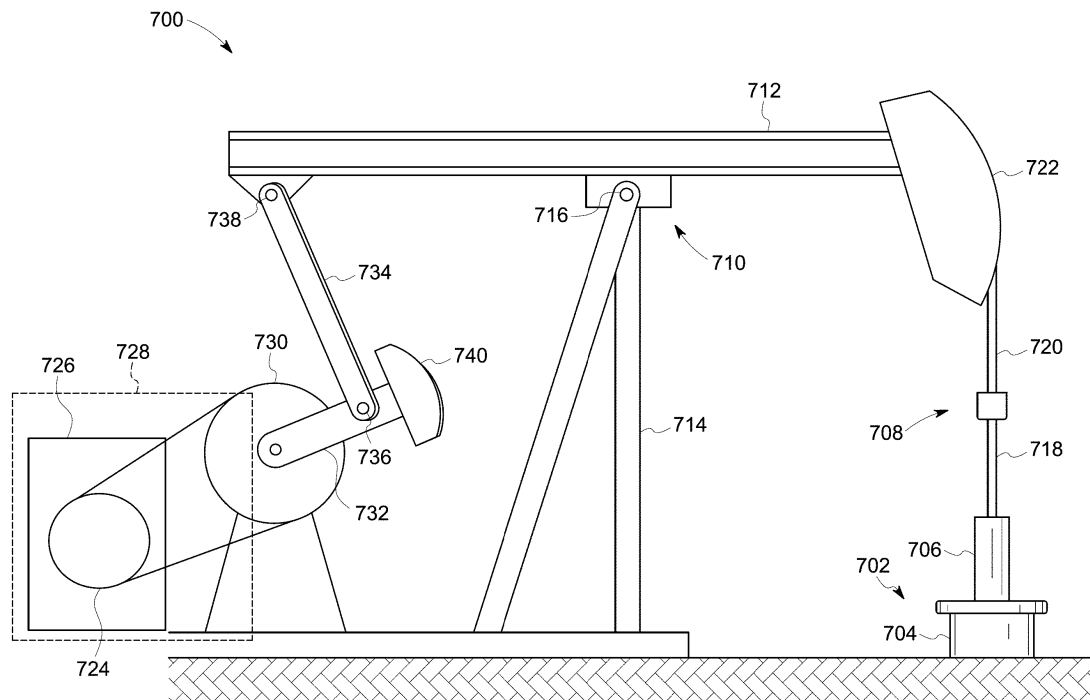
Family 56/100 - FAMPAT - ©Questel

Title

(US20170268500)

Controller and method of controlling a rod pumping unit

Images



Publication numbers with kind code & date

RU2018104087	A	2019-08-05	RU2018104087
CN108386349	A	2018-08-10	CN108386349
CA2993714	A1	2018-08-03	CA2993714
US20170268500	A1	2017-09-21	US20170268500



Abstract

(US20170268500)

A controller for operating a rod pumping unit at a pump speed. The controller includes a processor configured to operate a pump piston of the rod pumping unit at a first speed. The processor is further configured to determine a pump fillage level for a pump stroke based on a position signal and a load signal. The processor is further configured to reduce the pump speed to a second speed based on the pump fillage level for the pump stroke.

Inventors

AL ASSAD OMAR
BLOM JR ROGIER SEBASTIAAN
HUGHES GARY
BARTON JUSTIN EDWIN
WESTERKAMP PETER

Latest standardized assignees - inventors removed

GENERAL ELECTRIC

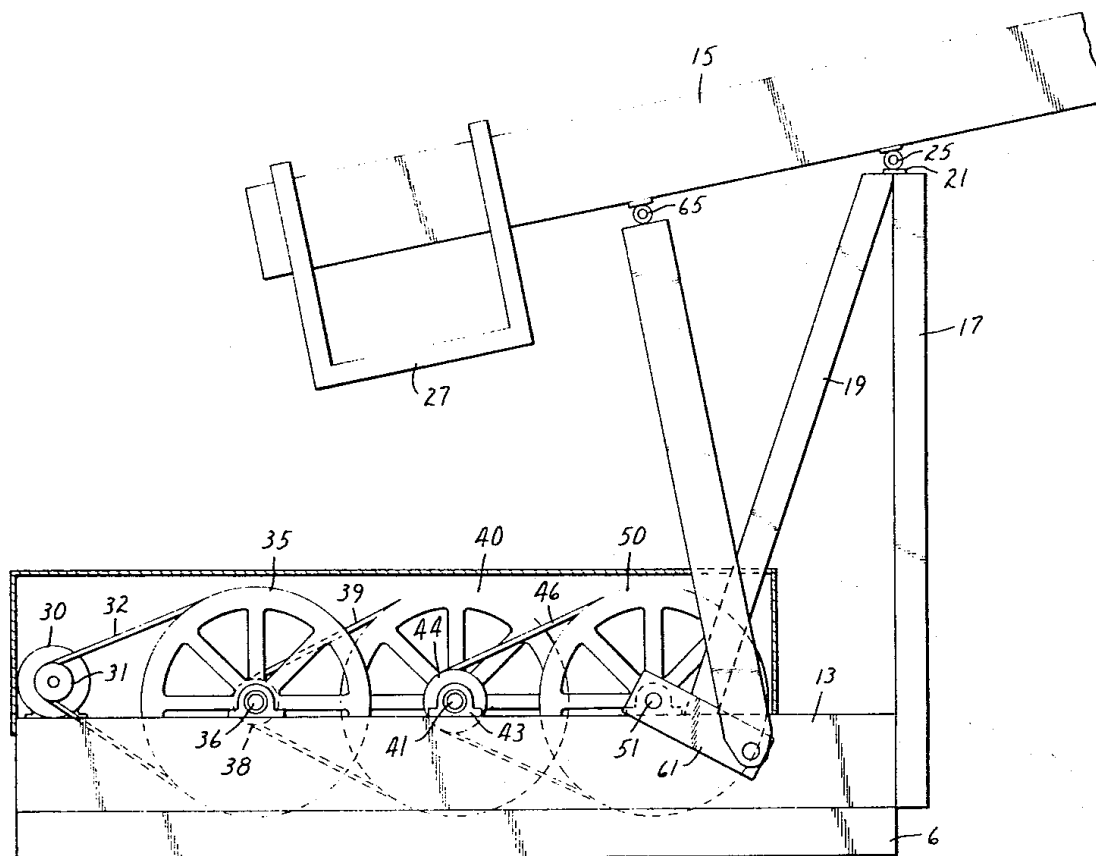
Family 57/100 - FAMPAT - ©Questel

Title

(US4238966)

Belt drive for pump jack

Images

**Publication numbers with kind code & date**[US4238966](#)

A 1980-12-16 US4238966

**Abstract**

(US4238966)

The pump drive mechanism provides a high reduction drive from a continuous operating motor to a crank arm to oscillate the counterbalanced jack for a pump as used in the oil field. The drive utilizes three series of belts to obtain a reduction of 190 to 1. The belt drive reduces downtime and improves the efficiency of drives for pump jacks.

Inventors

CARLSON RUSSELL R

TSCHETTER JOHN J

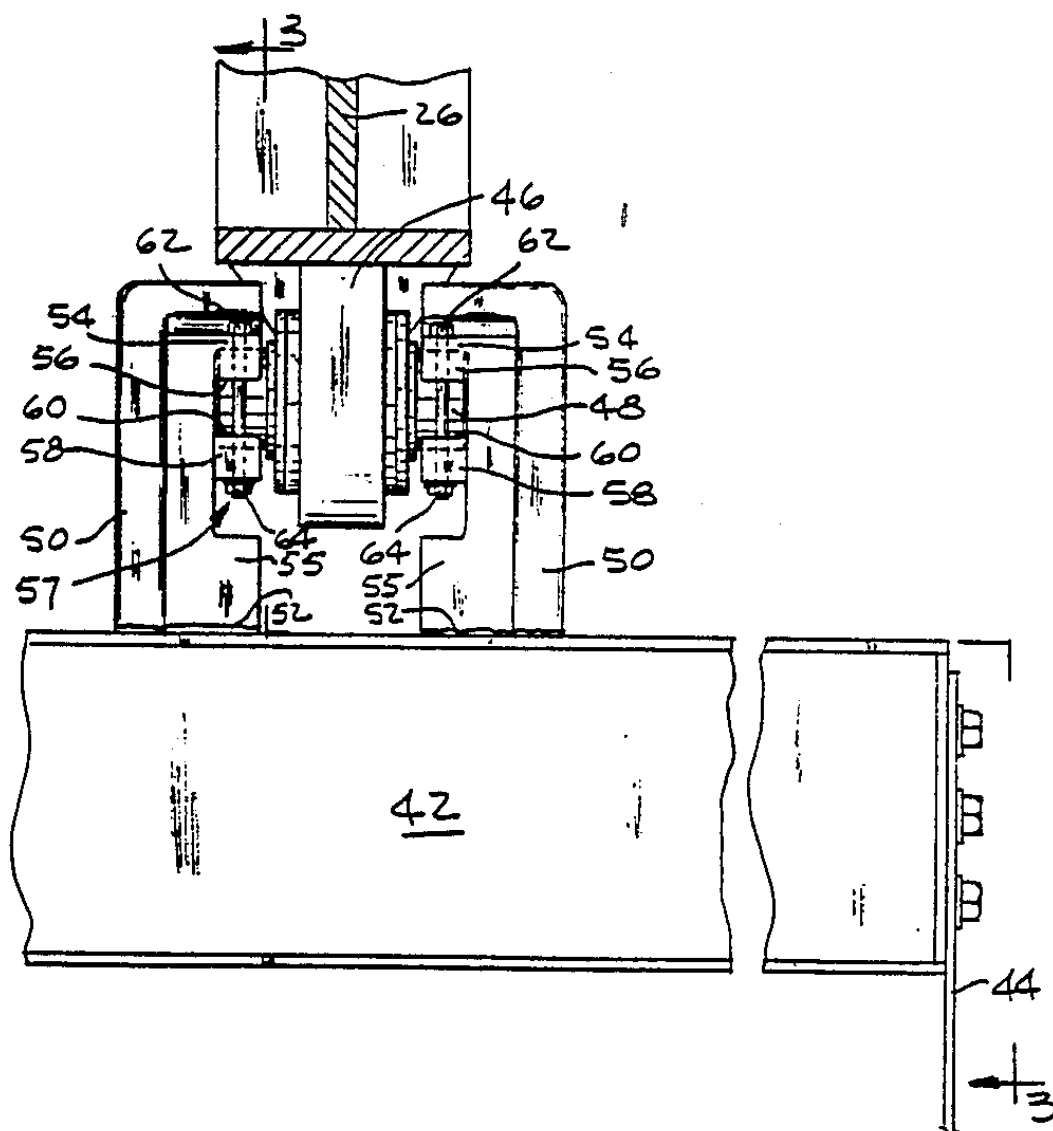
Family 58/100 - FAMPAT - ©Questel

Title

(US4727760)

Connection between the equalizer beam and the walking beam of a walking beam type oil well pumping unit

Images



Publication numbers with kind code & date

[US4727760](#)

A 1988-03-01 US4727760



Abstract

(US4727760)

The invention is directed to a connection between the equalizer beam and the walking beam in a walking beam type oil well pumping unit, the walking beam having a tail shaft rotatably mounted generally perpendicular to the longitudinal axis of the beam. The connection comprises an equalizer beam and two support members spaced from one another lengthwise of the equalizer beam and rigidly secured to the beam, each support member having an arm extending outwardly toward the other support member, and each arm having a curved downwardly-facing bearing surfaces adapted to be engaged by a respective end of the tail shaft. A retainer associated with each support member holds its respective end of the tail shaft in engagement with the downwardly-facing bearing surface when forces tending to separate the shaft from the bearing surface are applied to the shaft.

Inventors

TEEL LARRY W

BAILEY DONALD L

DAVIS BRIAN K

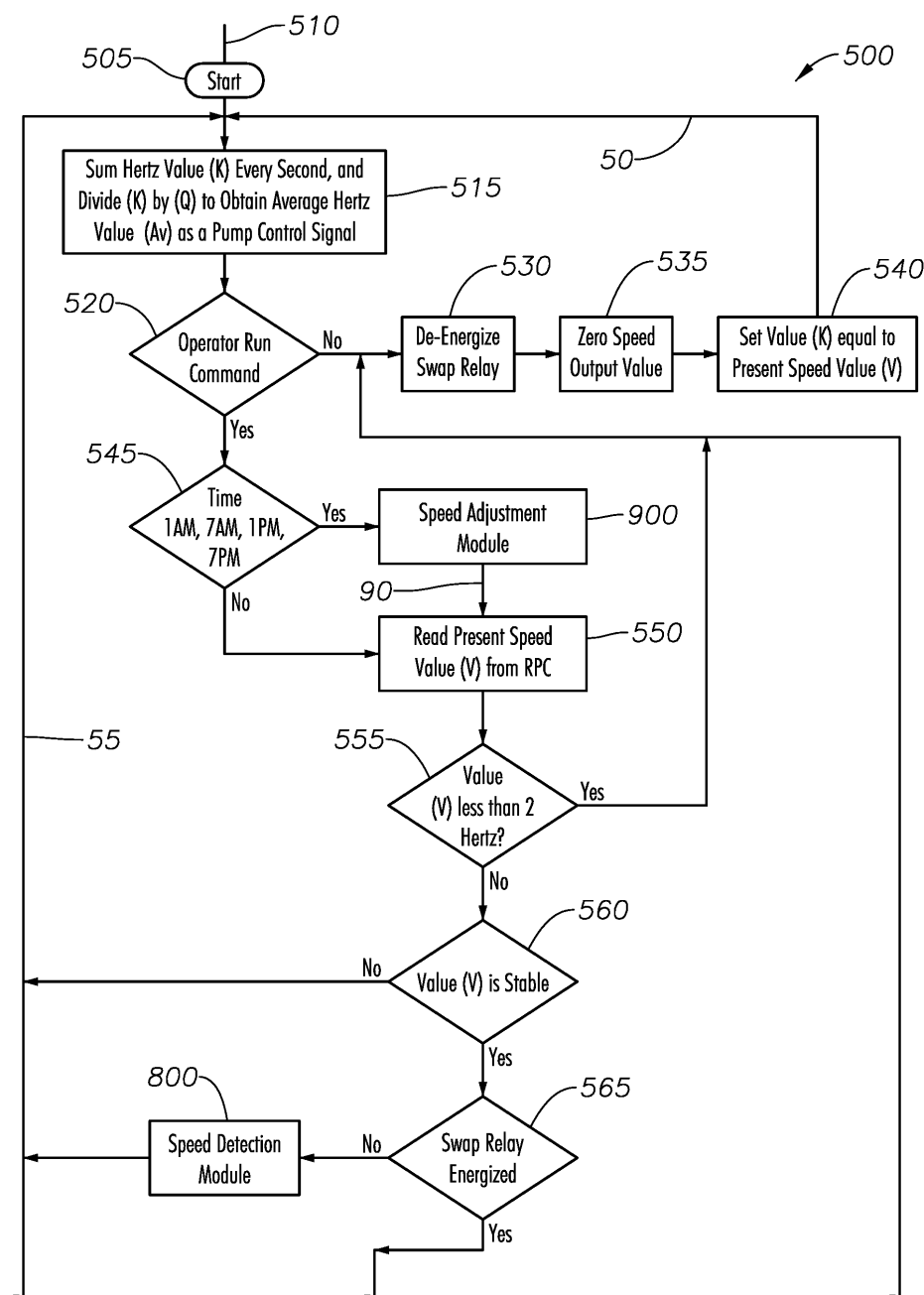
Latest standardized assignees - inventors removed

LUFKIN INDUSTRIES

Title

(US20160265321)

Well Pumping System Having Pump Speed Optimization

Images**Publication numbers with kind code & date**

US20160265321 A1 2016-09-15 US20160265321

CA2922149 A1 2016-09-11 CA2922149

**Abstract**

(US20160265321)

An oil well pumping system having stroke optimization is provided. The system includes a downhole pump residing within a

wellbore, and a rod string extending down into the wellbore and connected to the pump. The system also includes a well head having an actuator configured to reciprocate the rod string and connected downhole pump as upstrokes and as downstrokes, and a pump stroke controller. The pump stroke controller is configured to adjust a speed of the upstroke and a speed of the downstroke in response to signals indicative of pump fillage. In one aspect, the pump stroke controller tunes the pumping speed to match an average in-flow of production fluids into the pump over a multiple hour period to provide an optimum speed. A method for optimizing pumping speed at a wellbore is also provided herein.

Inventors

ELMER WILLIAM G

Latest standardized assignees - inventors removed

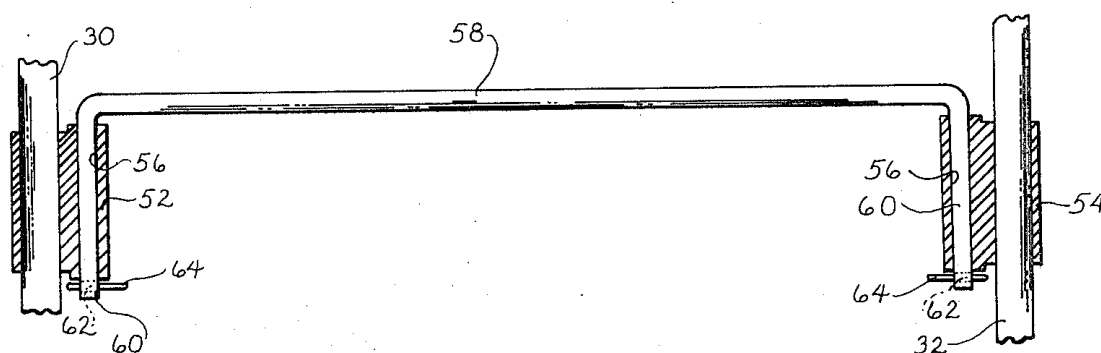
ENCLINE ARTIFICIAL LIFT TECHNOLOGY

Family 60/100 - FAMPAT - ©Questel

Title

(US3789679)

Pumping unit safety guard

Images**Publication numbers with kind code & date**[US3789679](#) A 1974-02-05 US3789679**Abstract**

(US3789679)

A brace bar is placed between pitmans of a pump jack to maintain the crossbeam in proper position in the event one of the wrist pins holding one of the pitmans to the crank arm comes loose.

Inventors

WESTBROOK V

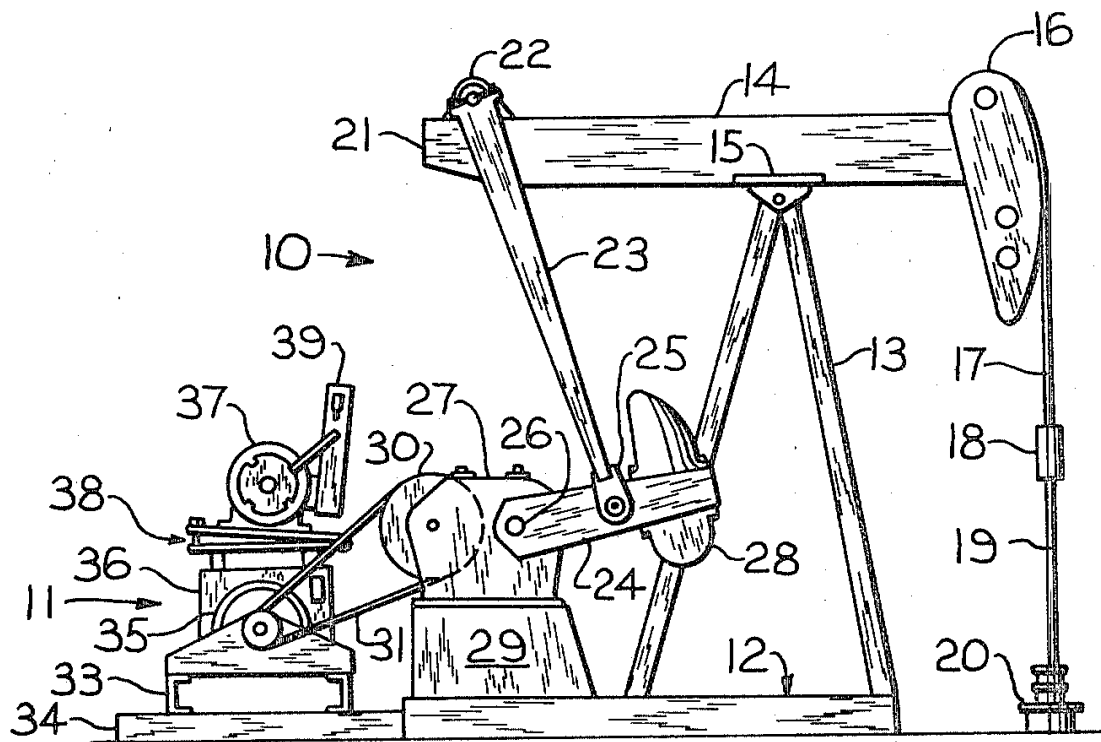
Family 61/100 - FAMPAT - ©Questel

Title

(US4601640)

Oil well pump

Images

**Publication numbers with kind code & date**[US3867846](#)

A 1975-02-25 US3867846

**Abstract**

(US3867846)

Pumpjack apparatus for reciprocatingly driving a plunger comprising a low slip electric motor connected to a gear reduction assembly by a torque converter, with the gear reducer cranking a walking beam so as to effect reciprocatory motion thereof. The combination of a low slip motor and a torque converter provides more slip than can be attained with a conventional high slip electrical motor, and also imposes less peak torque loads upon the gear reduction system.

Inventors

CAMBERN LONNIE KENNETH

Latest standardized assignees - inventors removed

VANCE INDUSTRY

Family 63/100 - FAMPAT - ©Questel

Title

(GB201612688)

Penman (recirculating hydro / fluid) electric power plant (PEPP)

Images

Integrated base assembly for beam pumping unit

Images

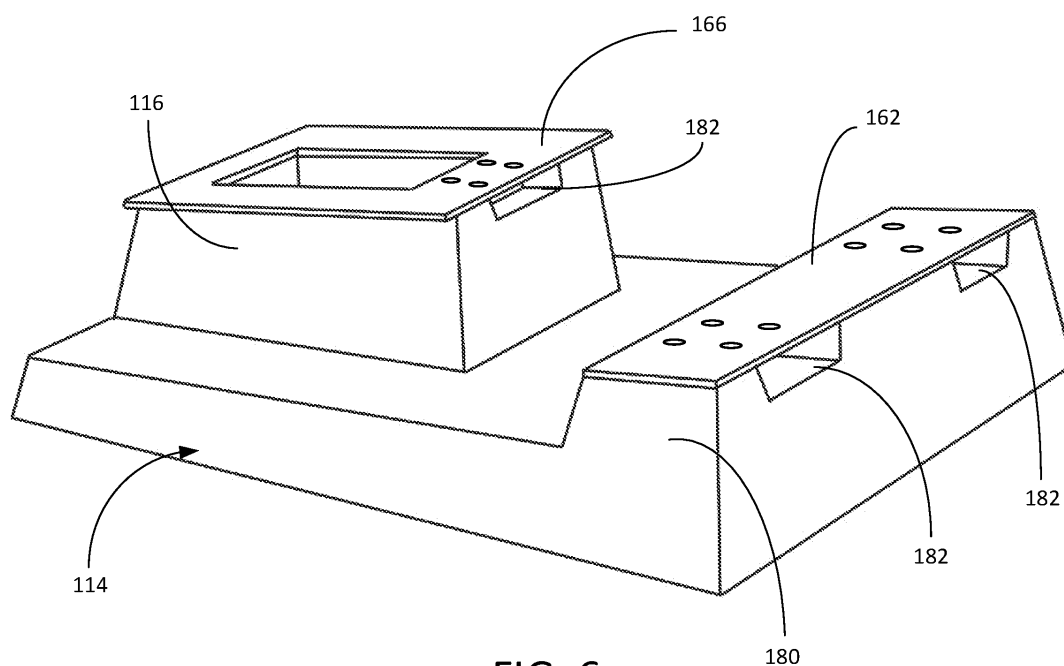


FIG. 6

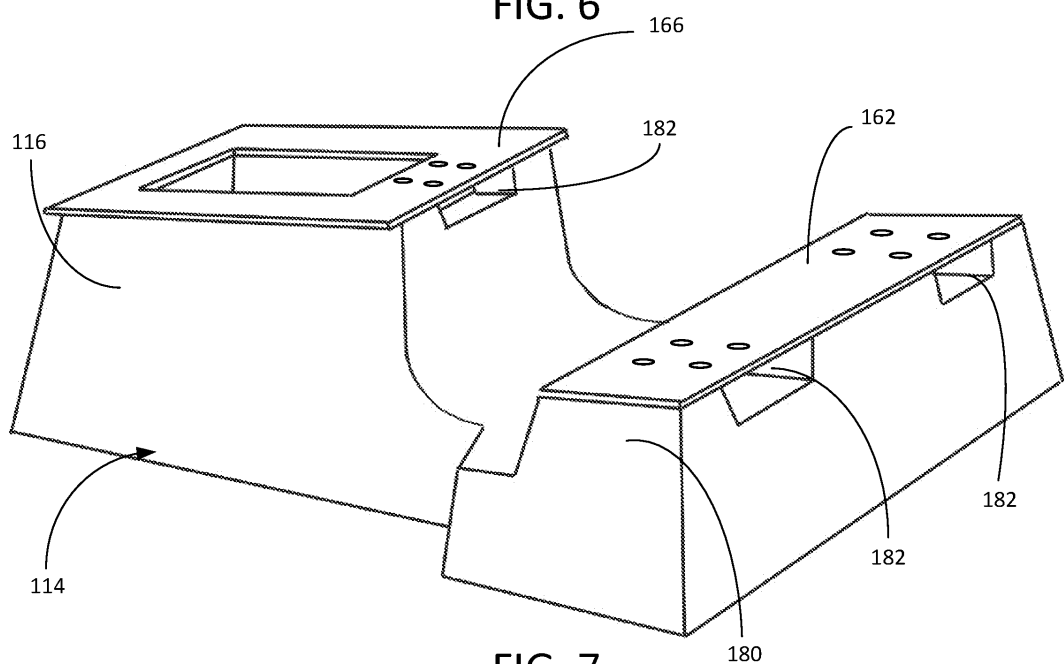


FIG. 7

Publication numbers with kind code & date

US20190056057	A1	2019-02-21	US20190056057
WO2019/036312	A1	2019-02-21	WO201936312



Abstract

(WO2019/036312)

A beam pumping unit includes an integrated base assembly that has a unitary pedestal, a Samson post supported by the integrated base assembly and a gear box supported by the integrated base assembly. The integrated base assembly further includes a front connection plate and a pedestal connection plate that are configured to provide a bolted support to the Samson post. The front connection plate and the pedestal connection plate can be secured to the integrated base assembly with a series of embedded tubular anchors.

Inventors

JONES ROBERT

Latest standardized assignees - inventors removed

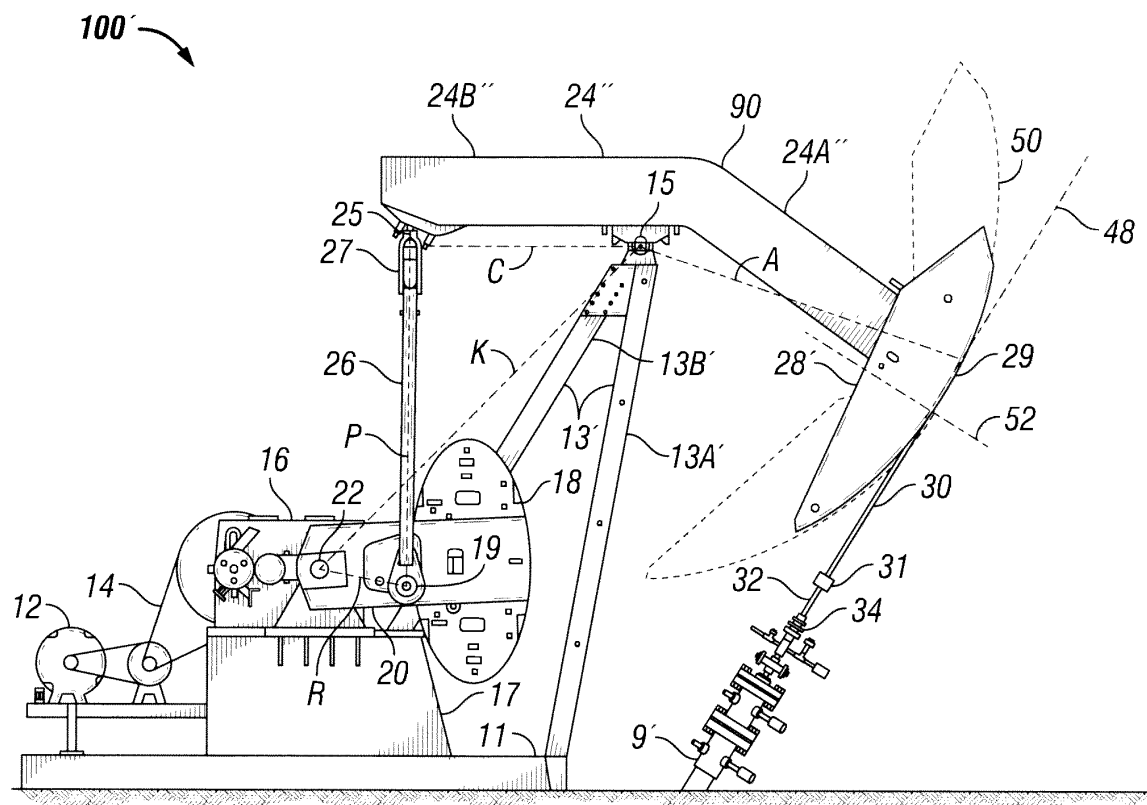
LUFKIN

Family 65/100 - FAMPAT - ©Questel

Title

(EP2603763)

Beam pumping unit for inclined wellhead

Images**Publication numbers with kind code & date**

CA2815051	C	2018-09-04	CA2815051
EP2603763	A4	2018-01-24	EP2603763
CN103154658	B	2017-11-07	CN103154658B
EA201300227	A1	2013-08-30	EA201300227
EP2603763	A1	2013-06-19	EP2603763
CN103154658	A	2013-06-12	CN103154658
US8240221	B2	2012-08-14	US8240221
CA2815051	A1	2012-02-16	CA2815051
WO2012/021506	A1	2012-02-16	WO201221506
US20120031208	A1	2012-02-09	US20120031208

**Abstract**

(EP2603763)

A method and pumping unit for use with an inclined wellhead. Proper address of the wellhead is accomplished through incorporation of an elbow-shaped walking beam. The forward section of the walking beam is fabricated such that its longitudinal axis is angled to address the inclination of the wellhead. The rearward section of the walking beam and the four-bar linkage system remains unchanged relative to a prior art pump jack intended for vertical wells. This modification is a simple and effective means of addressing an angled wellhead while preserving the well-known operating characteristics of a prior art pumping unit. Torque factors, polished rod position, speed, acceleration, stroke length, and effective counterbalance remain unchanged.

Inventors

SIMPSON RODDY W

DOYLE DAVID W

MORALES MARTIN E

ROMANO BRANDY D

Latest standardized assignees - inventors removed

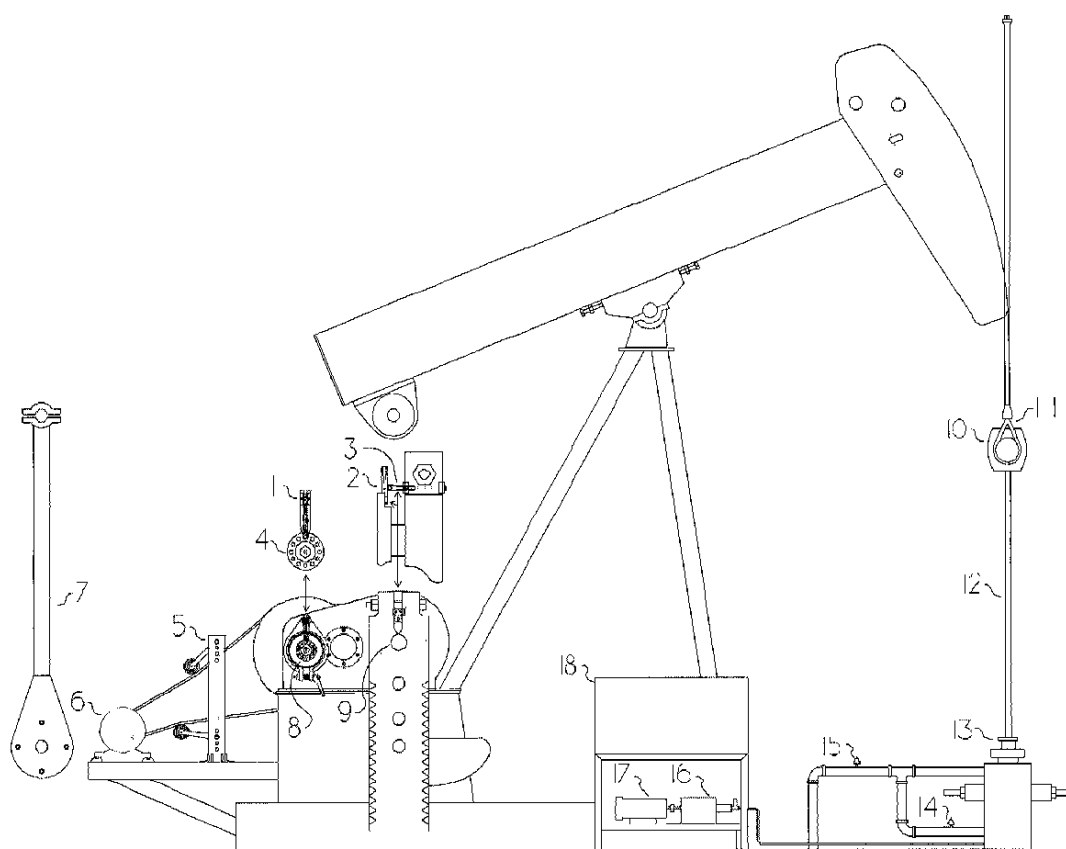
LUFKIN

Family 66/100 - FAMPAT - ©Questel

Title

(CA2954193)

Method and system for controlling stroke length and stroke speed in a conventional pump jack

Images**Publication numbers with kind code & date**[CA2954193](#)

A1 2018-07-12 CA2954193

**Abstract**

(CA2954193)

A method and system for determining the exact relative position of a conventional beam style pump jack for the purpose of controlling stroke length and stroke speed, without changing the main mechanical characteristics of the pump jack. This same method and system allows for remote data gathering, analysis of data, and remote control of beam style pump jacks.

Inventors

HASELOH PETER G

PETROLEUM RECOVERY SYSTEMS

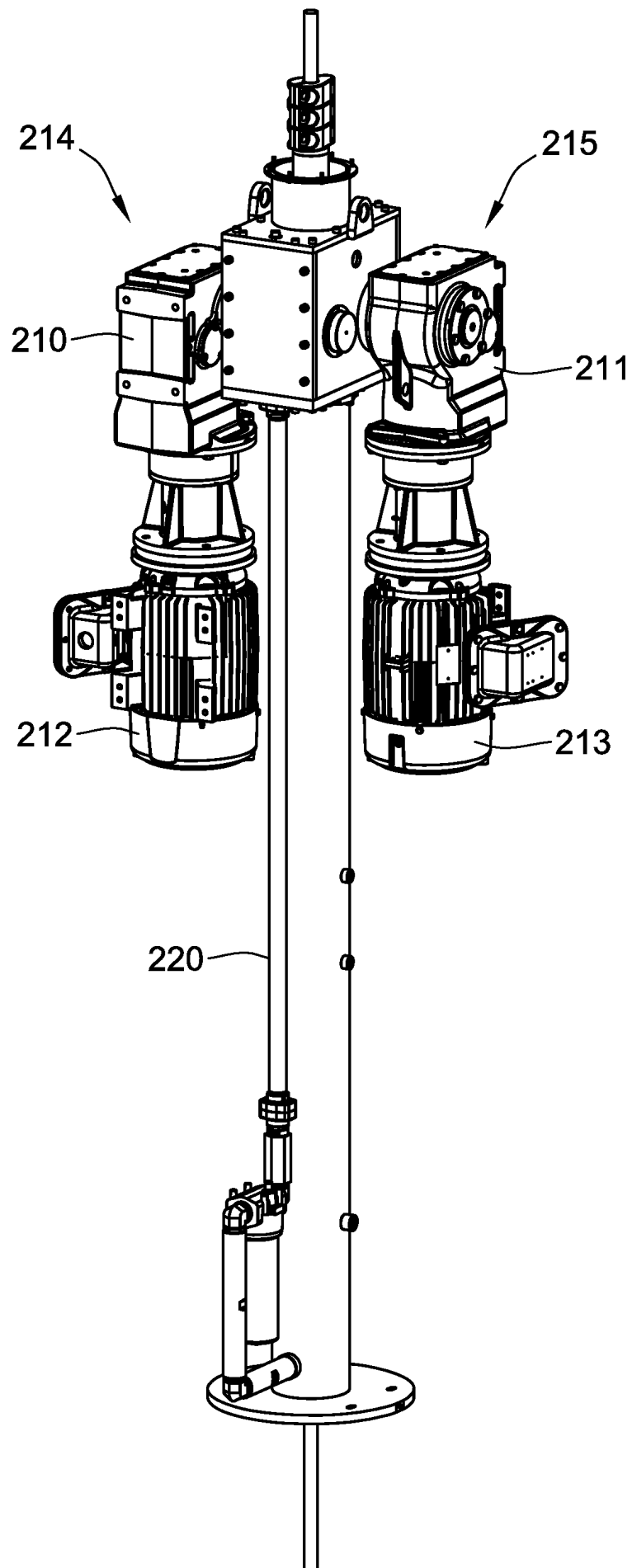
Family 68/100 - FAMPAT - ©Questel

Title

(EP3362686)

Tandem motor linear rod pump

Images



Publication numbers with kind code & date

US20190120217	A1	2019-04-25	US20190120217				
US20190120218	A1	2019-04-25	US20190120218				
US10197048	B2	2019-02-05	US10197048				
EP3362686	A4	2018-12-05	EP3362686				
BR112018007311	A2	2018-10-23	BR112018007311				
EA201890948	A1	2018-09-28	EA201890948				
EP3362686	A1	2018-08-22	EP3362686				
MX2018002491	A	2018-06-15	MX2018002491				
BR112018007311	A1	2018-04-24	BR112018007311				
AU2016338398	A1	2018-03-15	AU2016338398				
AR106329	A1	2018-01-03	AR-106329				
CA3001560	A1	2017-04-20	CA3001560				
US20170107979	A1	2017-04-20	US20170107979				
WO2017/066440	A1	2017-04-20	WO201766440				

Abstract

(EP3362686)

A tandem motor linear rod pumping apparatus for imparting reciprocating, substantially-vertical motion to a pump rod for a sucker-rod pump. The tandem motor linear rod pumping apparatus includes first and second linear mechanical actuator systems disposed in a single housing. These linear mechanical actuator systems impart and control vertical motion of the pump rod. Each linear mechanical actuator system includes a rack and pinion gearing arrangement. Each rack is operatively connected with two pinions. Each pinion is operatively connected to a motor. Rotation of the two motors in a first direction results in an upward motion of the rack and connected sucker rod pump. Rotation of the two motors in a second direction, opposite the first direction, results in a downward motion of the rack and sucker rod pump. The tandem motor linear rod pumping apparatus includes at least one electronic controller to control the operation of the two motors.

Inventors

HILGERS ANDREW J

MACDONALD MICHAEL A

GREGORY BENJAMIN J

PETERSON RONALD G

Latest standardized assignees - inventors removed

UNICO

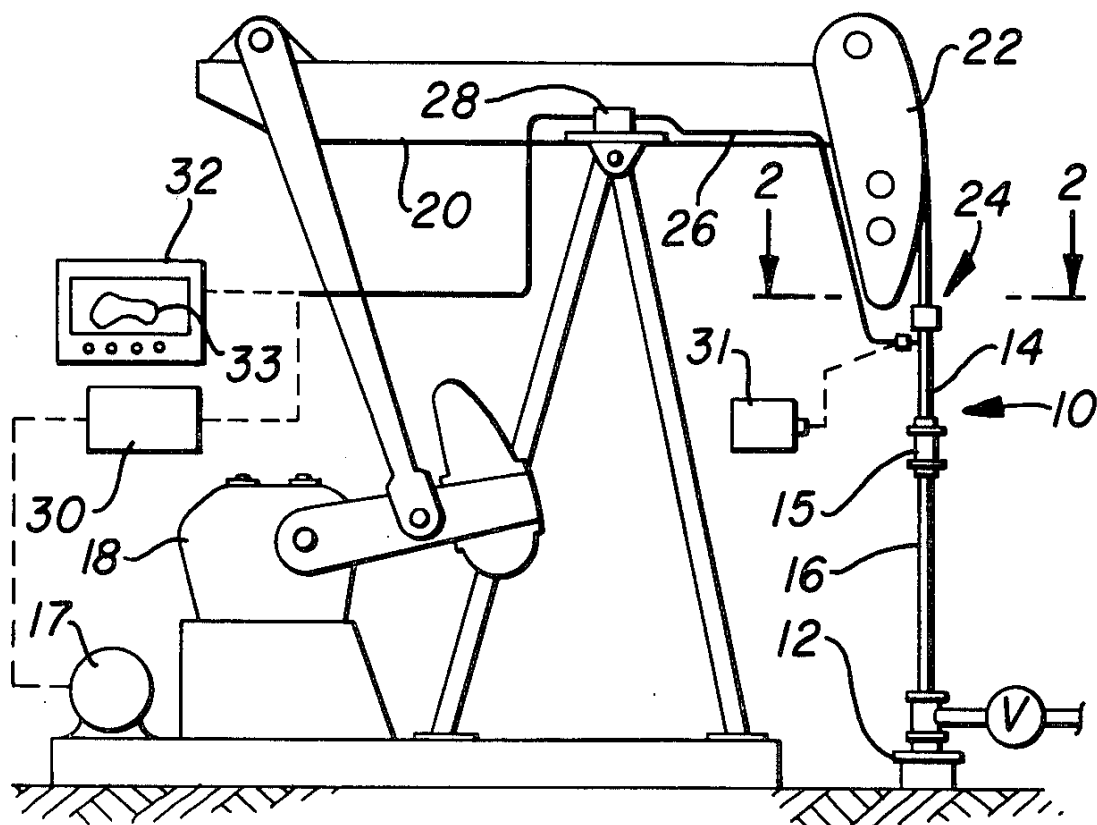
Family 69/100 - FAMPAT - ©Questel

Title

(US4363605)

Apparatus for generating an electrical signal which is proportional to the tension in a bridle

Images

**Publication numbers with kind code & date**

US4363605

A 1982-12-14 US4363605

**Abstract**

(US4363605)

Apparatus for generating an electrical signal which is proportional to the tension in a bridle which supports a string of sucker rod associated with a pumpjack unit. The apparatus includes a main frame having a load cell mounted thereto, and opposed cable engaging arms, one of which extends from the load cell to a cable of the bridle. The two arms place the load cell in compression thereby generating an electrical signal in proportion to the magnitude of the force exerted to spring the spaced parallel cables apart from one another. The signal is utilized to obtain an indirect measurement which is proportional to the tension in the sucker rod. This signal can be combined with another signal related to the position of the walking beam of the pumpjack unit to thereby provide a dynamometer card. The signal is also used as a pump off control which discontinues current flow to the pumpjack motor when the signal assumes a predetermined electrical configuration.

Inventors

MILLS MANUEL D

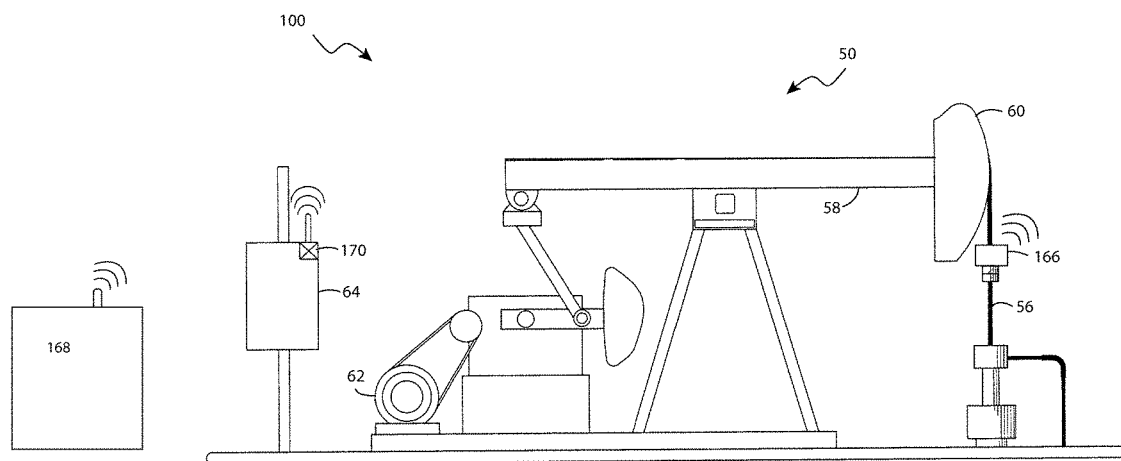
Family 70/100 - FAMPAT - ©Questel

Title

(US20170363079)

Integrated wireless data system and method for pump control

Images

**Publication numbers with kind code & date**

[US20170363079](#) A1 2017-12-21 US20170363079

**Abstract**

(US20170363079)

An integrated wireless data system and method for controlling and measuring operational data of a pumpjack system, for safety, health monitoring, and pump control is provided. The integrated wireless data system and method may be configured to allow for bi-directional communication with a central station to enable human intervention with pumpjack and to store pump parameters in a database for use in development of predictive maintenance techniques.

Inventors

BAKER DOUGLAS M

Latest standardized assignees - inventors removed

TECAT PERFORMANCE SYSTEMS

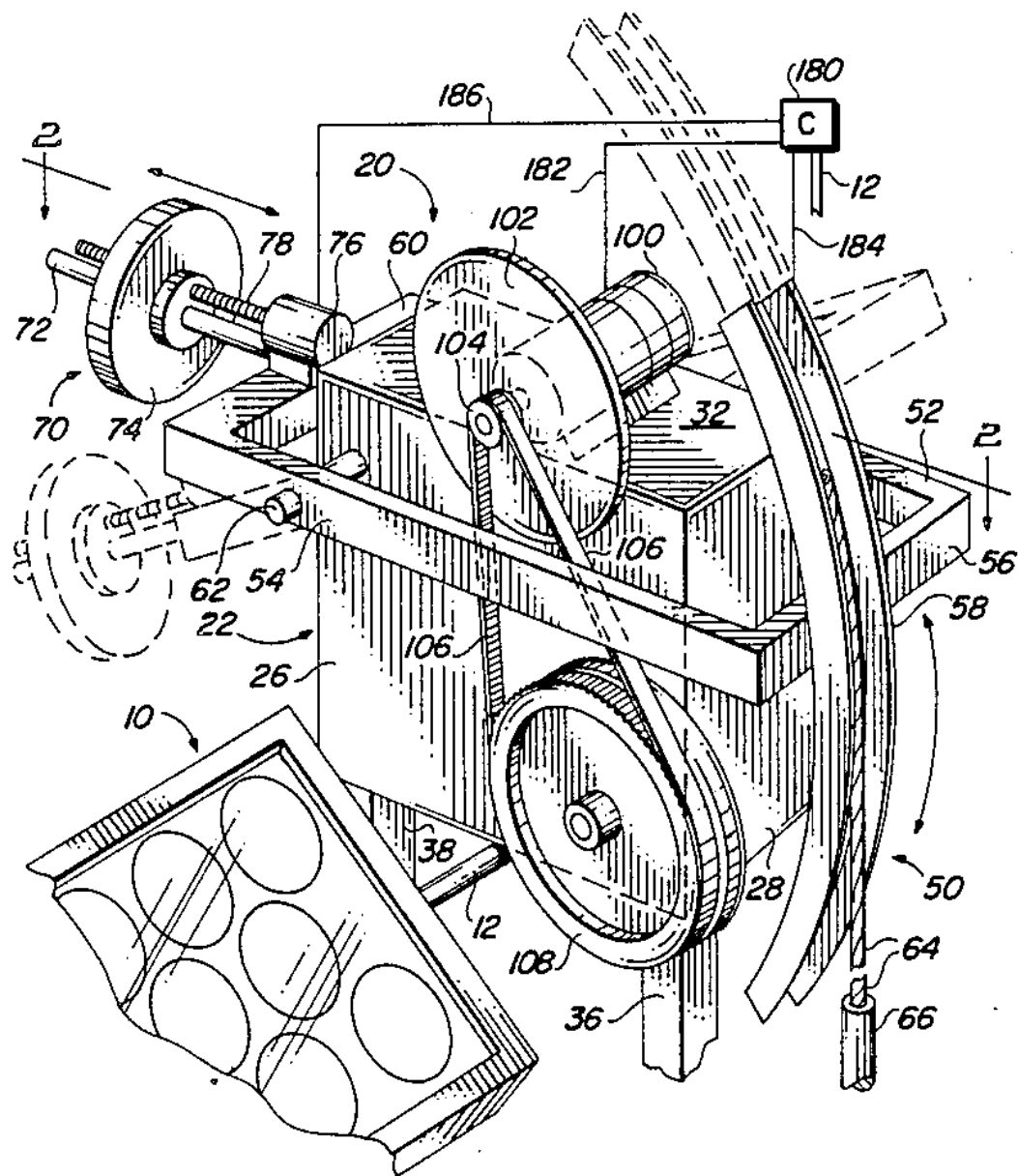
Family 71/100 - FAMPAT - ©Questel

Title

(US4681515)

Walking beam pump having adjustable crank pin

Images

**Publication numbers with kind code & date**[US4681515](#)

A 1987-07-21 US4681515

**Abstract**

(US4681515)

Variable stroke pump apparatus includes a photovoltaic array for providing electrical current to motors, one of which provides for the pumping action of a walking beam, one of which provides for movement of a control unit which varies the length of stroke of the pumping apparatus from a minimum of zero to a maximum, and one of which operates a counterweight for moving the counterweight in response to the pumping load. The apparatus includes mechanical elements which adjust the length of the stroke of the pumping arm, and a control system which controls the length of the pumping stroke in response to the output of the photovoltaic array.

Inventors

ALLEN JAMES C

Family 72/100 - FAMPAT - ©Questel

Title

(EP3129655)

Method and apparatus to determine production of downhole pumps

Images

AU2015237135	A1	2016-10-06	AU2015237135				
AR099819	A1	2016-08-17	AR--99819				
US20150300156	A1	2015-10-22	US20150300156				
CA2943266	A1	2015-10-01	CA2943266				
US20150275650	A1	2015-10-01	US20150275650				
WO2015/149083	A1	2015-10-01	WO2015149083				
CN104948436	A	2015-09-30	CN104948436				

Abstract

(EP3129655)

Methods and apparatus to determine production of downhole pumps are disclosed. An example method includes measuring an amount of liquid produced from a well by a pumping unit during a predetermined time period and determining first areas of first pump cards during the predetermined time period. The example method also includes summing the first areas and, based on the amount of liquid produced and the summed first areas, determining a leakage proportionality constant of a downhole pump of the pumping unit.

Inventors

MILLS THOMAS MATTHEW

Latest standardized assignees - inventors removed

BRISTOL COMPANY

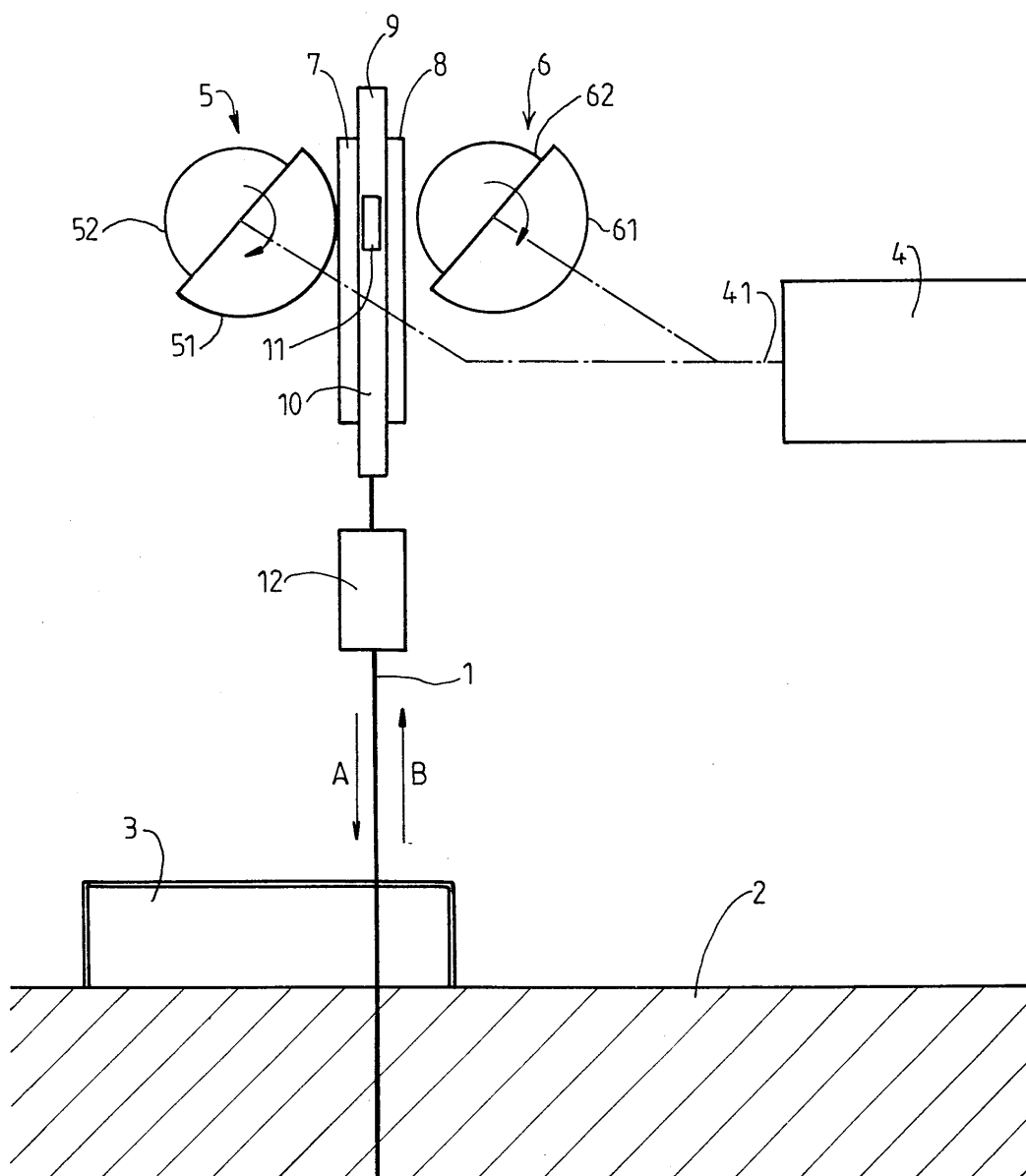
Family 73/100 - FAMPAT - ©Questel

Title

(FR2749367)

Unidirectional low speed drive transmission for water pump

Images

**Publication numbers with kind code & date**

FR2749367

A1 1997-12-05 FR2749367

**Abstract**

(FR2749367)

The drive is for a water pump describing a slow alternating motion of which the rod is reciprocating following a fixed course, a continuous rotary motor drive (4) and joined by a transmission to the rod (1). It consists of a toothed extension (5) and a toothed return (6) joined to the output of the motor (1), a toothed extension rack (7) and a toothed return rack solid with each other. Each toothed drive (5,6) is provided with teeth (51,61) only on part of its periphery equal to or less than a semi-circle and displaced by 180 degrees. Each of the gear teeth cooperate with the associated toothed rack. A damper (12) joins the toothed racks (9,7,8) to the rod of the equipment (1).

Inventors

DJELOUAH SALAH

Latest standardized assignees - inventors removed

SORELEC

Family 74/100 - FAMPAT - ©Questel

Title

Latest standardized assignees - inventors removed

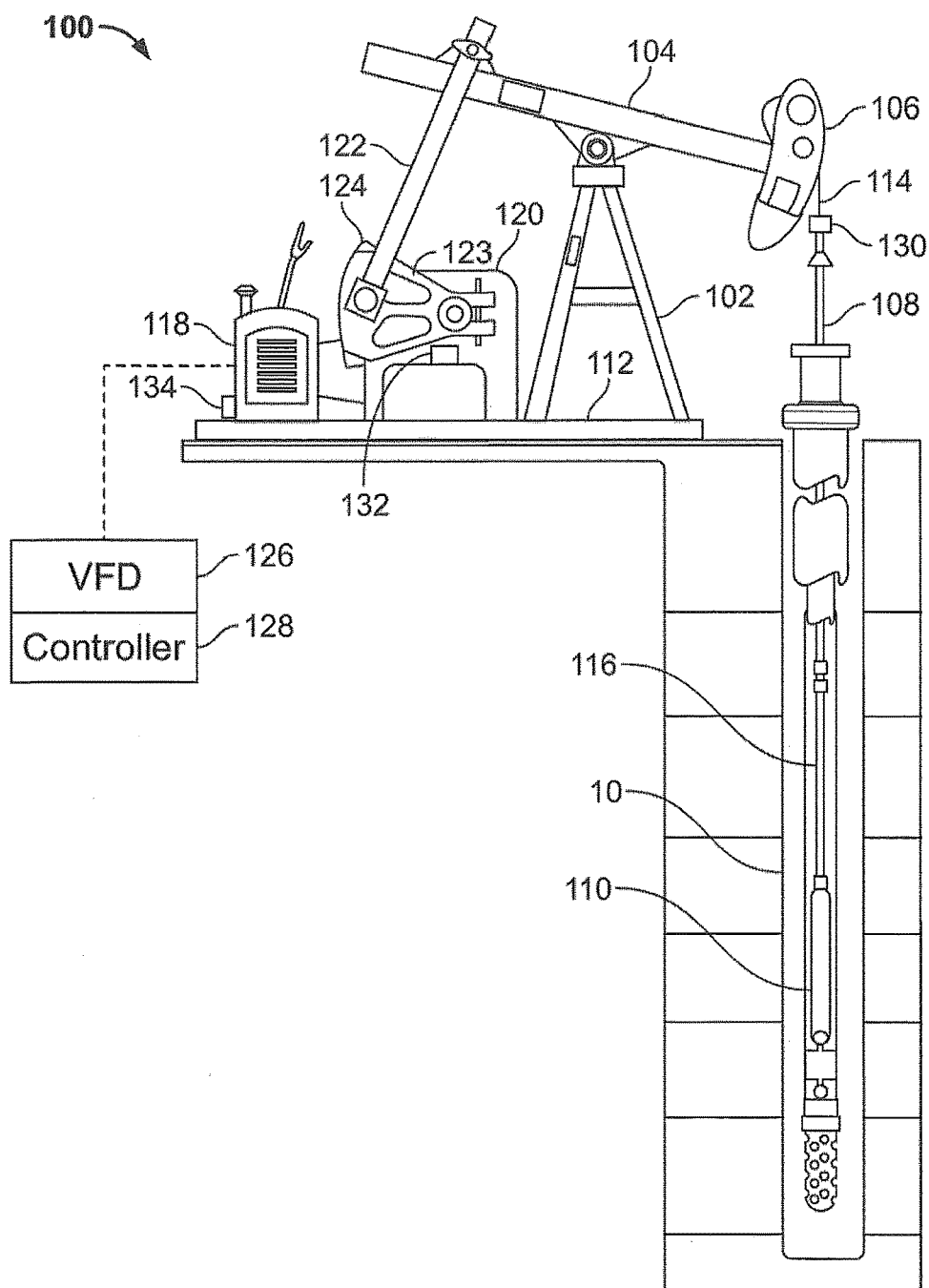
BRISTOL COMPANY

Family 76/100 - FAMPAT - ©Questel

Title

(US20170002805)

Electric motor control for pumpjack pumping

Images**Publication numbers with kind code & date**

US20170002805 A1 2017-01-05 US20170002805

**Abstract**

(US20170002805)

A pumpjack is driven by an electric motor coupled to a gear box. A local drive controller controls the motor in accordance with a varying motor speed profile over a pumping cycle of the pumpjack. The drive controller determines, based on

sensory feedback from the one or more sensors, a pumping cycle load profile, automatically determines, based on the pumping cycle load profile, a varying voltage profile, and controls the motor in accordance with the varying motor speed profile while applying the varying voltage profile to the motor.

Inventors

WILLIAMS BERTRAND JEFFERY

SAUERS II VICTOR

Latest standardized assignees - inventors removed

POWERUP NES

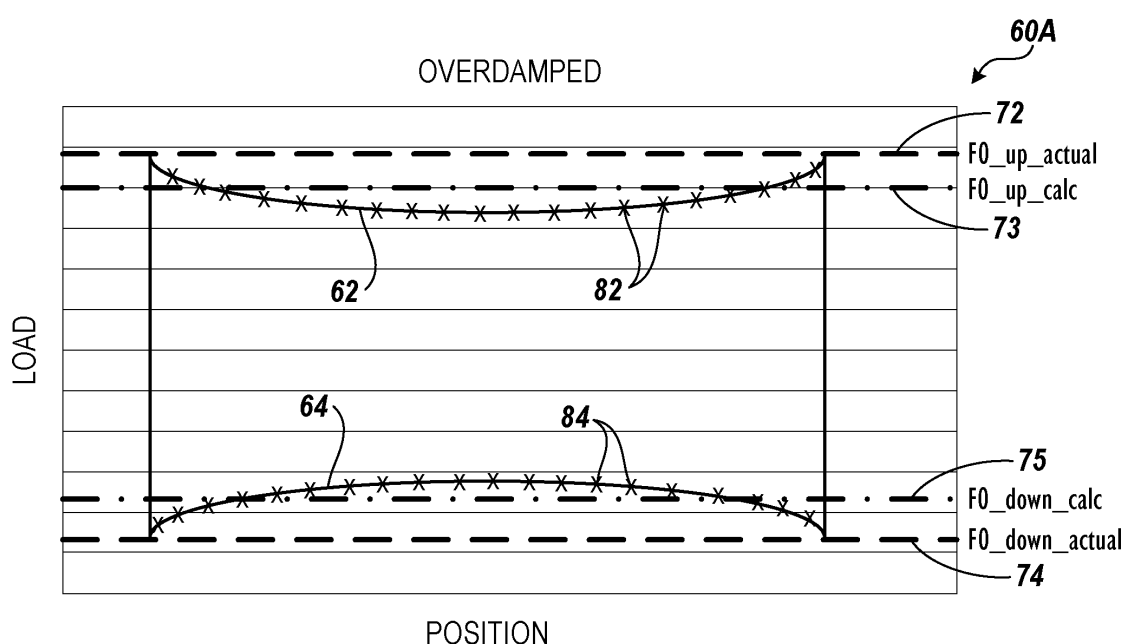
Family 77/100 - FAMPAT - ©Questel

Title

(EP2771541)

Calculating downhole cards in deviated wells

Images



Publication numbers with kind code & date

EP2776714	B1	2018-08-29	EP2776714
CN104334825	B	2018-07-17	CN104334825B
US9897083	B2	2018-02-20	US9897083
CA2857144	C	2018-01-02	CA2857144
US9810212	B2	2017-11-07	US9810212
US9810213	B2	2017-11-07	US9810213
US9810214	B2	2017-11-07	US9810214
EP2771541	B8	2017-09-20	EP2771541
EP2771541	B1	2017-08-09	EP2771541
BR112014010219	A2	2017-06-27	BR112014010219
BR112014010227	A2	2017-06-27	BR112014010227
CN104185735	B	2017-05-10	CN104185735B
CA2856090	C	2016-11-22	CA2856090
RU2602719	C2	2016-11-20	RU2602719
EP2771541	A4	2016-06-29	EP2771541
EP2776714	A4	2016-06-29	EP2776714



AU2012328426	B2	2016-06-09	AU2012328426				
RU2014121401	A	2015-12-10	RU2014121401				
RU2567567	C1	2015-11-10	RU2567567				
AU2012348346	B2	2015-09-17	AU2012348346				
WO2013/063591	A3	2015-06-18	WO201363591				
CN104334825	A	2015-02-04	CN104334825				
CN104185735	A	2014-12-03	CN104185735				
EP2776714	A1	2014-09-17	EP2776714				
EP2771541	A2	2014-09-03	EP2771541				
BR112014010219	A1	2014-08-19	BR112014010219				
BR112014010227	A1	2014-08-19	BR112014010227				
AU2012328426	A1	2014-05-22	AU2012328426				
AU2012348346	A1	2014-05-22	AU2012348346				
CA2857144	A1	2013-06-13	CA2857144				
WO2013/085637	A1	2013-06-13	WO201385637				
US20130115104	A1	2013-05-09	US20130115104				
US20130115107	A1	2013-05-09	US20130115107				
CA2856090	A1	2013-05-02	CA2856090				
US20130104645	A1	2013-05-02	US20130104645				
US20130108472	A1	2013-05-02	US20130108472				
WO2013/063591	A2	2013-05-02	WO201363591				

Abstract

(EP2771541)

Diagnosing a pump apparatus having a downhole pump disposed in a deviated wellbore characterizes axial and transverse displacement of a rod string with two coupled non-linear differential equations of fourth order, which include axial and transverse equations of motion. To solve the equations, derivatives are replaced with finite difference analogs. Initial axial displacement of the rod string is calculated by assuming there is no transverse displacement and solving the axial equation. Initial axial force is calculated using the initial axial displacement and assuming there is no transverse displacement. Initial transverse displacement is calculated using the initial axial force and the initial axial displacement.

Inventors

PONS VICTORIA M

Latest standardized assignees - inventors removed

WEATHERFORD TECHNOLOGY HOLDINGS

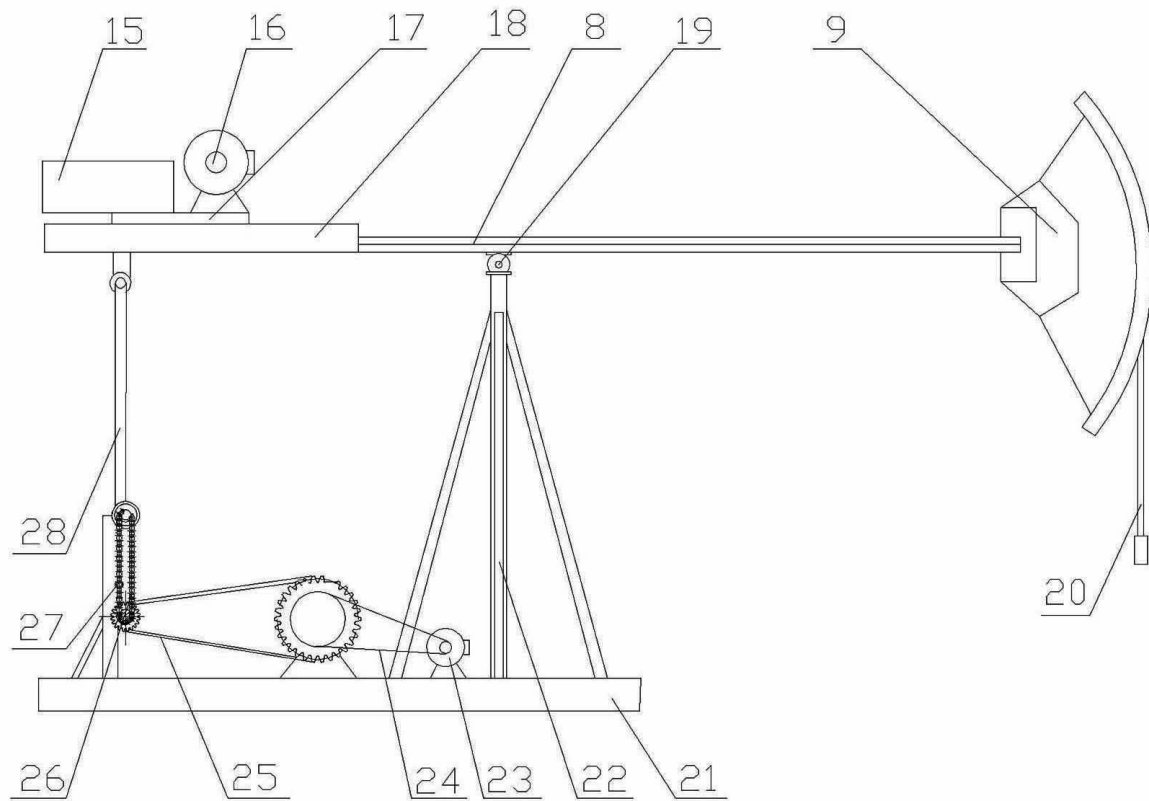
Family 78/100 - FAMPAT - ©Questel

Title

(CN102155186)

Lever system for pumping unit

Images



Publication numbers with kind code & date

[CN102155186](#)

A

2011-08-17

CN102155186



Abstract

(CN102155186)

The patent refers to the field of 'obtaining fluids from wells'. The invention discloses a lever system for a pumping unit. The lever system comprises a main support, a walking beam, a horse head, a pull rod hinged at the other end of the walking beam, a first drive device, a detecting device which is arranged on a stand for detecting upward or downward state of the pull rod, a rail formed at the pull rod side of the walking beam, a sliding seat matched with the rail to form a rail pair, a counter weight arranged on the sliding seat, and a second drive device for driving the sliding seat to run according to the pull rod state detected by the detecting device to ensure that the sliding seat is close to a constraint hinge when the pull rod moves upward and the sliding seat is far from the sliding seat when the pull rod moves downward, therefore, the lever system has small energy consumption and smaller output power of a power output part.

Inventors

LÜ CHUANQING

Family 79/100 - FAMPAT - ©Questel

Title

(CA1220979)

Pump jack

Publication numbers with kind code & date

[CA1220979](#)

A

1987-04-28

CA1220979



Abstract

(CA1220979)

A pump jack having a walking beam oscillated in a vertical arc by a hydraulic actuating cylinder that receives pressurized hydraulic fluid from a variable displacement pump. The hydraulic actuating cylinder is controlled by a hydraulic valve having an operating member mechanically shifted by a second hydraulic actuating cylinder near the end points of the pivotation are of the walking beam to reverse the direction of movement of the walking beam during the shifting of the operating member of the hydraulic valve. The second hydraulic actuating cylinder is controlled by a second hydraulic valve that transmits pressure to the second hydraulic actuating cylinder from the variable displacement pump and reverses the flow of

pressurized hydraulic fluid to the ports of the second hydraulic actuating cylinder near the end points of the pivotation arc of the walking beam.

Inventors

BRANTLY NEWBY O

Family 80/100 - FAMPAT - ©Questel

Title

(CN201934076U)

Lever system of oil pump

Publication numbers with kind code & date

[CN201934076](#) U 2011-08-17 CN201934076U

**Abstract**

(CN201934076)

The utility model discloses a lever system of an oil pump, which comprises a main support, a walking beam, a horse head, a pull rod, a first driving device, a detection device, a track, a slide carriage, a counterweight and a second driving device; the detection device is arranged on a frame and is used for detecting the ascending and descending state of the pull rod; the track is formed on the pull rod side of the walking beam; the slide carriage is matched with the track to form a track pair; the counterweight is arranged on the slide carriage; and the second driving device drives the slide carriage to run according to the state of the pull rod detected by the detection device, so that the slide carriage is close to a hinge support when the pull rod ascends and keeps off the hinge support when the pull rod descends. In the lever system of the oil pump, not only is the energy consumption low, but also the output power of a power output part is also lower.

Inventors

LÜ CHUANQING

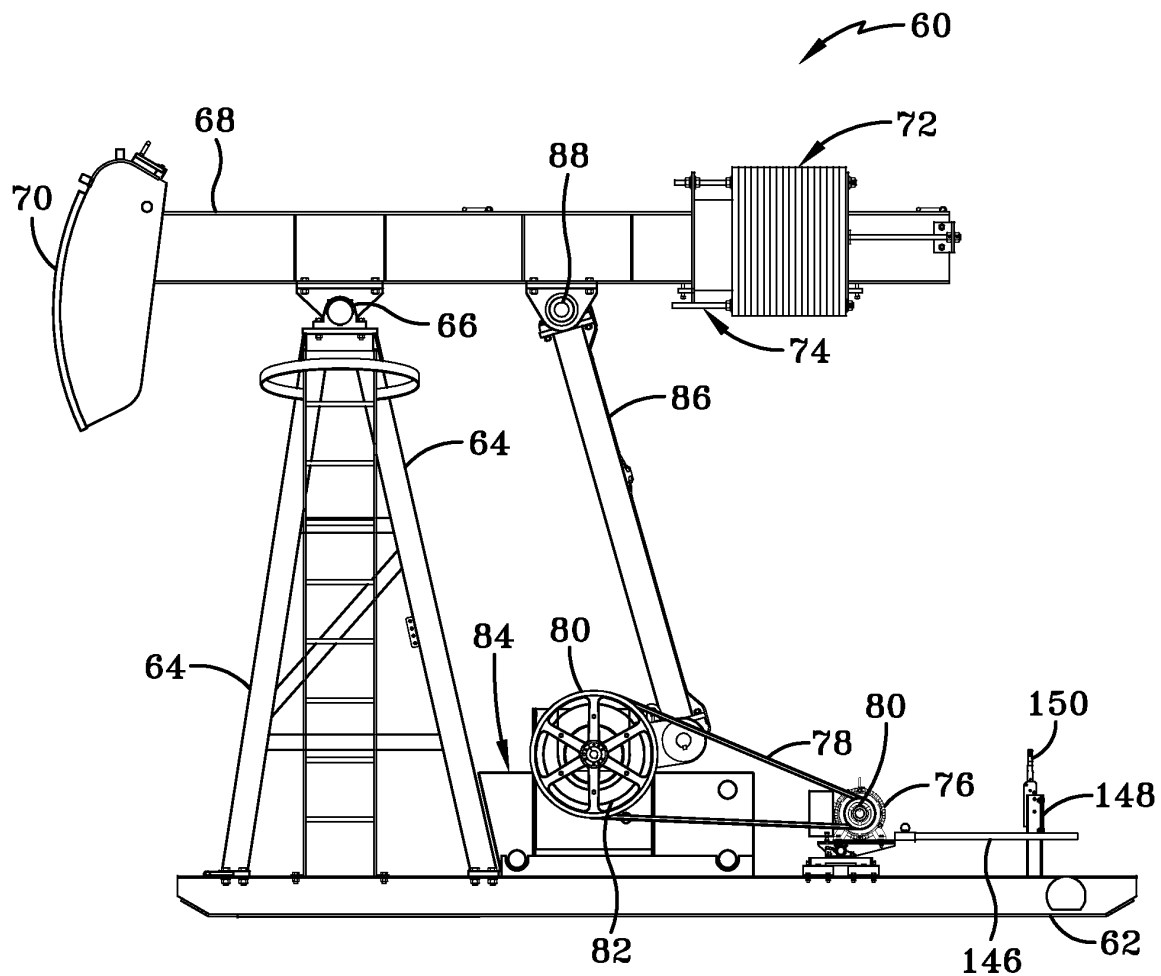
Family 81/100 - FAMPAT - ©Questel

Title

(US20100170353)

Pumping unit

Images

**Publication numbers with kind code & date**

US20100170353

A1 2010-07-08

US20100170353

**Abstract**

(US20100170353)

A pumping unit that removes fluid from a well includes a base disposed on a foundation adjacent the well. A group of support posts is mounted on the base and extends upwardly to a center bearing, and is connected to the center bearing. A walking beam is pivotally mounted on the bearing. A Pitman arm is pivotally connected to the walking beam rearwardly of the center bearing, and extends downwardly to a crank assembly. The crank assembly is mounted on the base centrally beneath the Pitman arm, and is pivotally connected to the Pitman arm. A gear reducer is mounted on the side of the crank assembly, and a drive unit is mounted on the base and is connected to the gear reducer. Actuation of the drive unit actuates movement of the gear reducer, crank assembly, Pitman arm, and the walking beam to pump the fluid from the well.

Inventors

MATTISON DAVID BRUCE

PAUMIER JAMES J

Latest standardized assignees - inventors removed

NEW RIVER EQUIPMENT CANTON OH

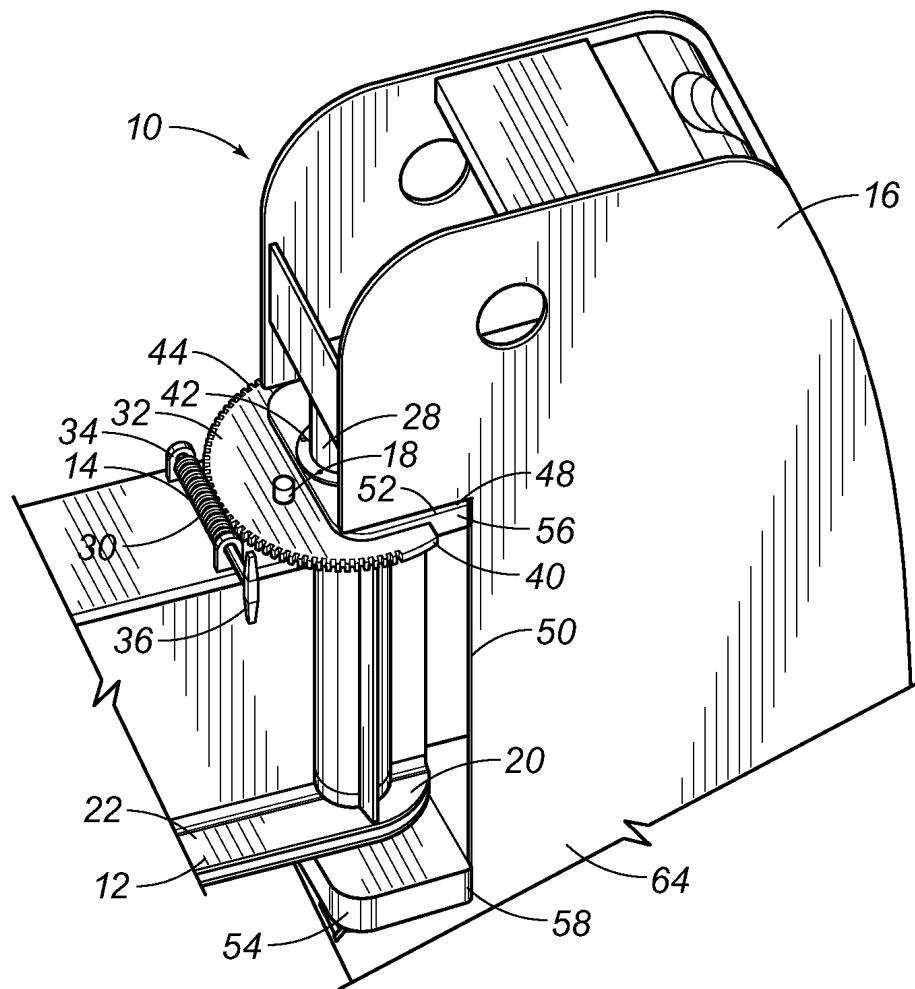
Family 82/100 - FAMPAT - ©Questel

Title

(US9057426)

Swiveling joint for a horse head on a pump jack

Images



Publication numbers with kind code & date

US9057426	B2	2015-06-16	US9057426
US20150040692	A1	2015-02-12	US20150040692



Abstract

(US20150040692)

A swiveling joint system for a horse head on a pump jack includes a working beam, a worm drive, a horse head member, and at least one locking pin. The swiveling joint system improves access to parts of the well because the horse head member can be swiveled out of position instead of being completely disassembled. The locking pin holds the horse head member in alignment with the working beam. When the locking pin is removed, the worm drive controls the swiveling of the horse head member in either direction towards either side of the working beam. The worm drive has a worm gear attached to the horse head member so that movement and position of the horse head corresponds to movement of the worm gear. The horse head member and working beam are rotatable relative to each other on a pivot pin, which can be connected to a lubricator.

Inventors

GAN JIANHUI

Latest standardized assignees - inventors removed

IBY OUTLET

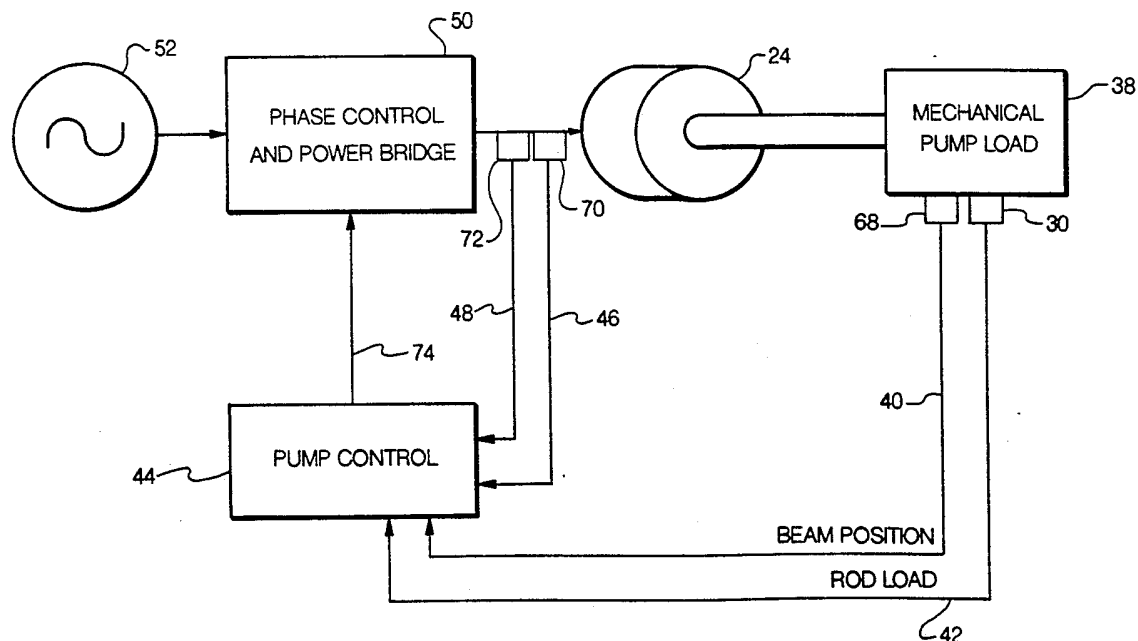
Family 83/100 - FAMPAT - ©Questel

Title

(US5204595)

Method and apparatus for controlling a walking beam pump

Images



Publication numbers with kind code & date

US5204595

A

1993-04-20

US5204595



Abstract

(US5204595)

Method for controlling an electric drive motor coupled to a reciprocating mechanical system such as an oil well walking beam pump by inserting a pair of power-off pulses in a reciprocation period of the pump motor energization cycle, with one pulse in a top-of-cycle region and the other pulse in a bottom-of-cycle region to reduce rod stress and motor electrical power consumption and increase pump displacement and efficiency.

Inventors

OPAL KENNETH E

HAPPEL WILLIAM J

Latest standardized assignees - inventors removed

MAGNETEK

MAGNETEK ADS POWER

MAGNETEK NATIONAL ELECTRIC COIL

MAGNETEK NATONAL ELECTRIC COIL

MAGNETEK MONDEL HOLDING

MONDEL ULC

MONDEL ULC C O MAGNETEK

MAGNETEK ALTERNATIVE ENERGY

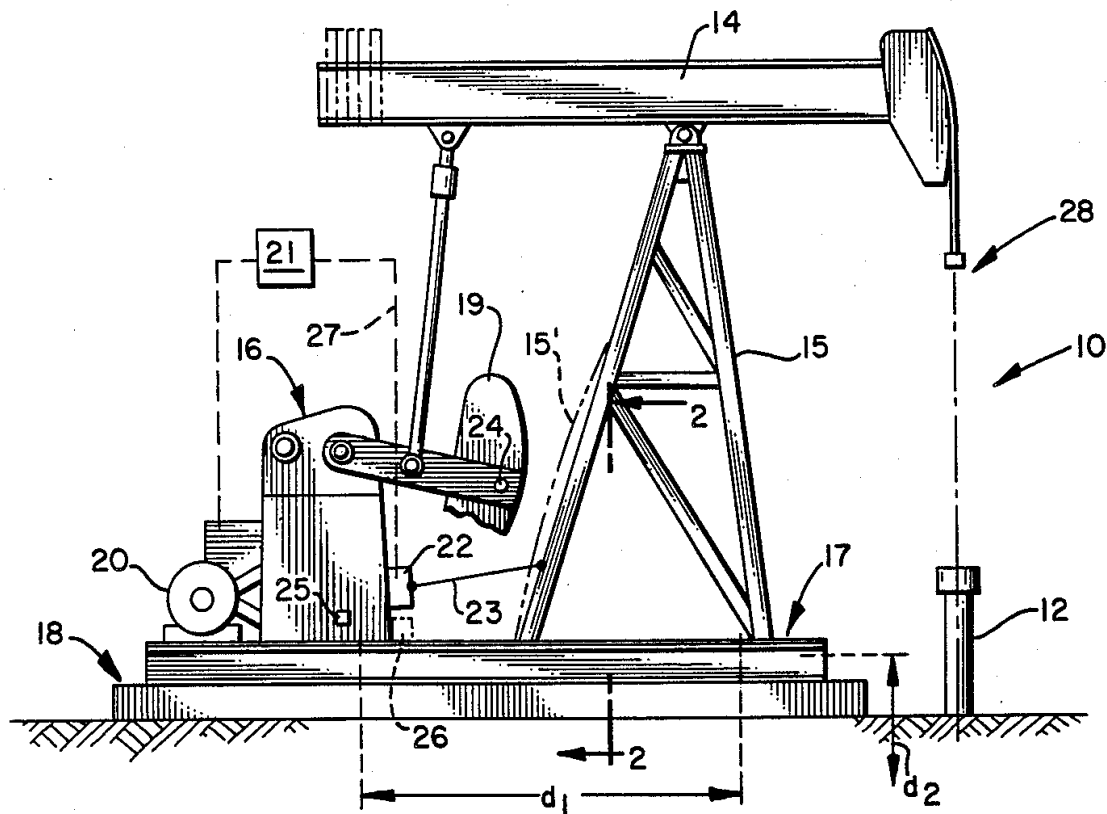
Family 84/100 - FAMPAT - ©Questel

Title

(US4631954)

Apparatus for controlling a pumpjack prime mover

Images

**Publication numbers with kind code & date**[US4631954](#)

A 1986-12-30 US4631954

**Abstract**

(US4631954)

An improved pump control having a device for measuring relative movement between structural components of a pumpjack unit, and converting the movement into a signal which varies according to the magnitude of the movement. The signal is divided into an upstroke and downstroke component so that during one cycle of the pumping operation, the downstroke part of the signal can be analyzed. A selected part of the downstroke signal can be used to indicate a pump-off condition. The entire signal can also be treated to provide a plot having characteristics similar to a dynamometer card. The disclosure further sets forth a motion sensor which measures the characteristics of the motion induced into the pumpjack structure and provides a signal which can be used to shut-in the well each time a pump-off condition is reached by the bottom hole pump.

Inventors

MILLS MANUEL D

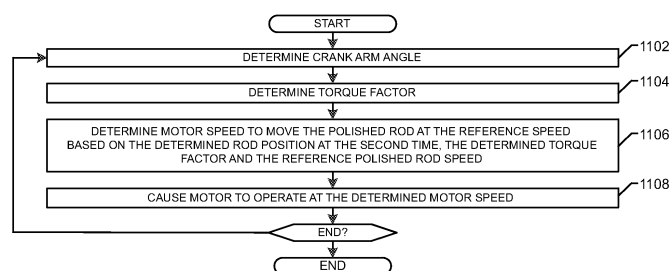
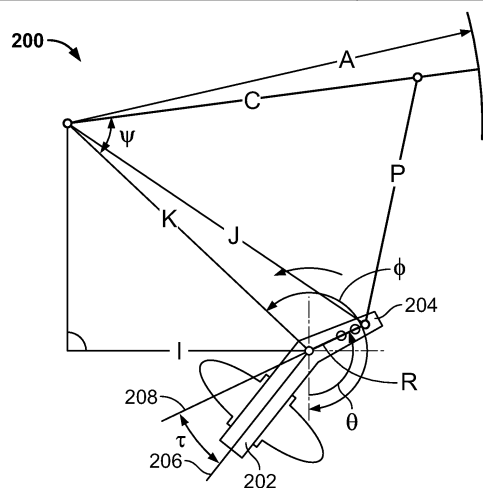
Family 85/100 - FAMPAT - ©Questel

Title

(EP3164600)

Methods and apparatus to determine operating parameters of a pumping unit for use with wells

Images



Publication numbers with kind code & date

JP6604978	B2	2019-11-13	JP6604978
EP3164600	B1	2019-05-29	EP3164600
RU2686798	C2	2019-04-30	RU2686798
RU2017102020	A3	2018-12-20	RU2017102020
US10094371	B2	2018-10-09	US10094371
RU2017102020	A	2018-08-01	RU2017102020
BR112017000015	A2	2017-11-07	BR112017000015
JP2017521582	A	2017-08-03	JP2017521582
EP3164600	A1	2017-05-10	EP3164600
MX2017000175	A	2017-04-25	MX2017000175
BR112017000015	A1	2017-01-17	BR112017000015
AR101040	A1	2016-11-16	AR-101040
CN205301888	U	2016-06-08	CN205301888U
CN105242530	A	2016-01-13	CN105242530
CA2953536	A1	2016-01-07	CA2953536
US20160003236	A1	2016-01-07	US20160003236
WO2016/004148	A1	2016-01-07	WO201604148



Abstract

(EP3164600)

Methods and apparatus to determine operating parameters of a pumping unit for use with wells are disclosed. An example apparatus includes a housing and a processor positioned in the housing. The processor is to determine a rate at which to operate a motor of a pumping unit to enable a load imparted on a polished rod of the pumping unit to be within a threshold of a reference load or to enable a speed of the polished rod to be within a threshold of a reference speed.

Inventors

MILLS THOMAS MATTHEW

Latest standardized assignees - inventors removed

BRISTOL COMPANY

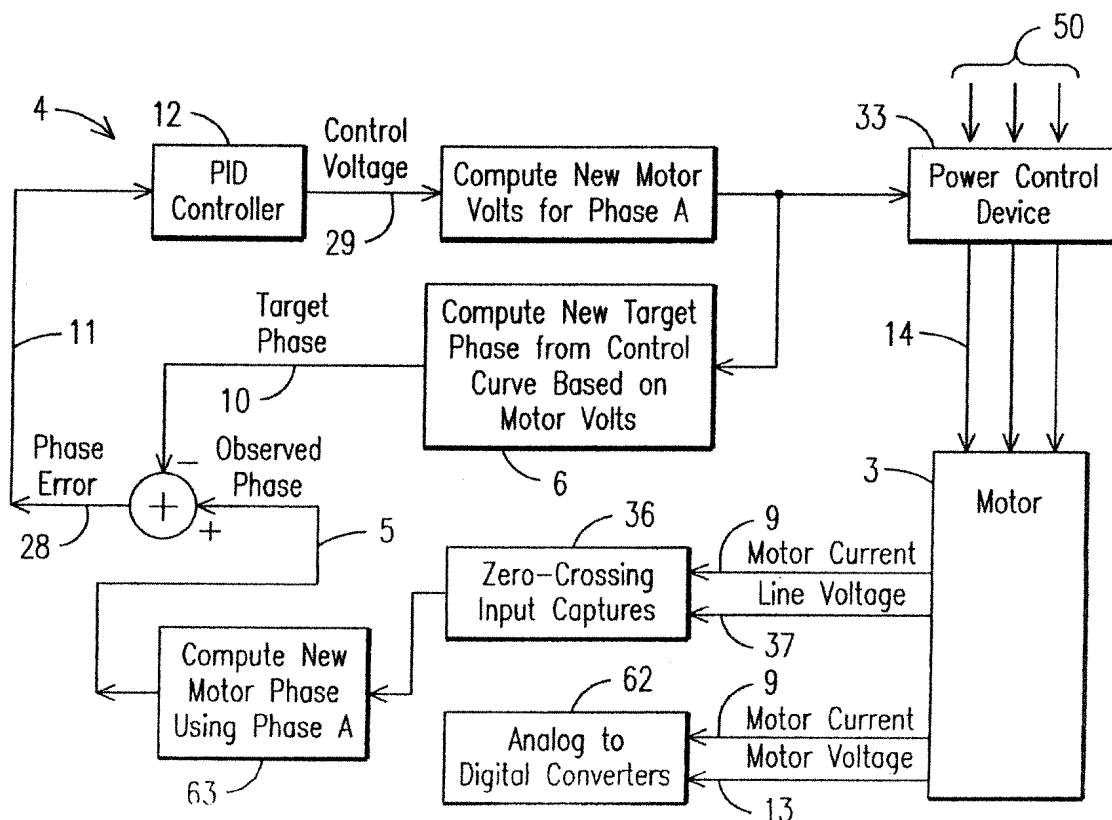
Family 86/100 - FAMPAT - ©Questel

Title

(WO2012158335)

Energy saving system and method for devices with rotating or reciprocating masses

Images



Publication numbers with kind code & date

US9716449	B2	2017-07-25	US9716449
US20140294602	A1	2014-10-02	US20140294602
US8698447	B2	2014-04-15	US8698447
WO2012/158335	A3	2013-01-10	WO2012158335
WO2012/158335	A2	2012-11-22	WO2012158335
US20120213645	A1	2012-08-23	US20120213645



Abstract

(WO2012/158335)

A system and method are provided for reducing the energy consumed by a pump jack electric motor by reducing the supply voltage to the motor when the motor would be generating energy in open loop mode. By substantially eliminating the energy generation mode, the braking action of the utility grid in limiting the acceleration of the motor and system that would otherwise occur is substantially removed. The motor and system will speed up, allowing the natural kinetic energy of the cyclic motion to perform part of the pumping action. In particular, when the energy consumption for the electric motor connected with the device having a rotating or reciprocating mass goes to zero, the line voltage to the motor is switched off, causing the frequency of the voltage across the motor terminals to increase. When the period of the voltage across the motor terminals returns to substantially the same as the period of the line voltage, the line voltage is switched on or reapplied to the motor.

Inventors

LUMSDEN JOHN L
 KELLEY PAUL H
 VENKATARAMAN VASAN

Latest standardized assignees - inventors removed

POWERWISE

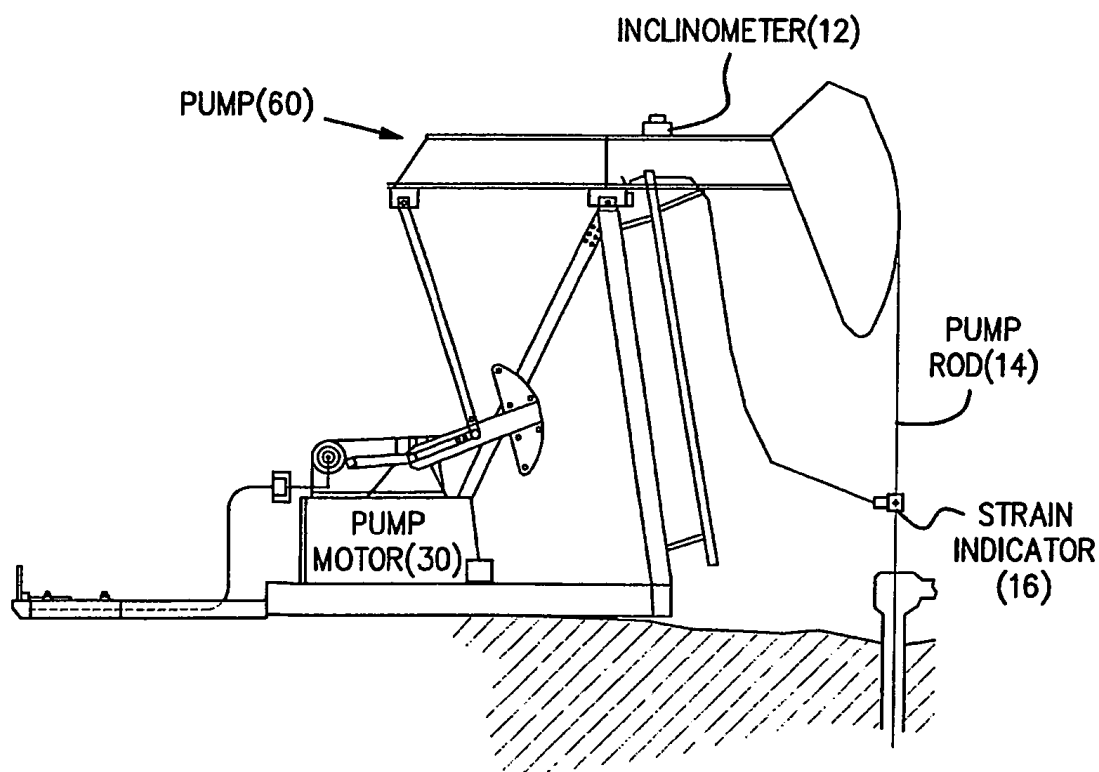
Family 87/100 - FAMPAT - ©Questel

Title

(WO200348578)

Rod saver speed control method and apparatus

Images



Publication numbers with kind code & date

US20050095140	A1	2005-05-05	US20050095140
MXPA04005322	A	2005-03-31	MX2004PA005322
AR038804	A1	2005-01-26	AR--38804
AU2002351167	A1	2003-06-17	AU2002351167
CA2469059	A1	2003-06-12	CA2469059
WO03/48578	A1	2003-06-12	WO200348578



Abstract

(WO03/48578)

A motor speed controller (100) identifies the position of a pump rod (14). At one or more critical positions of the rod, the motor speed controller (100) adjusts the speed of the motor to change the movement of the pump rod (14). The critical positions and the rate of change of speed at each critical position can be user-specified.

Inventors

BOREN STEVEN G

TORSEKE ERIK L

Latest standardized assignees - inventors removed

ABB

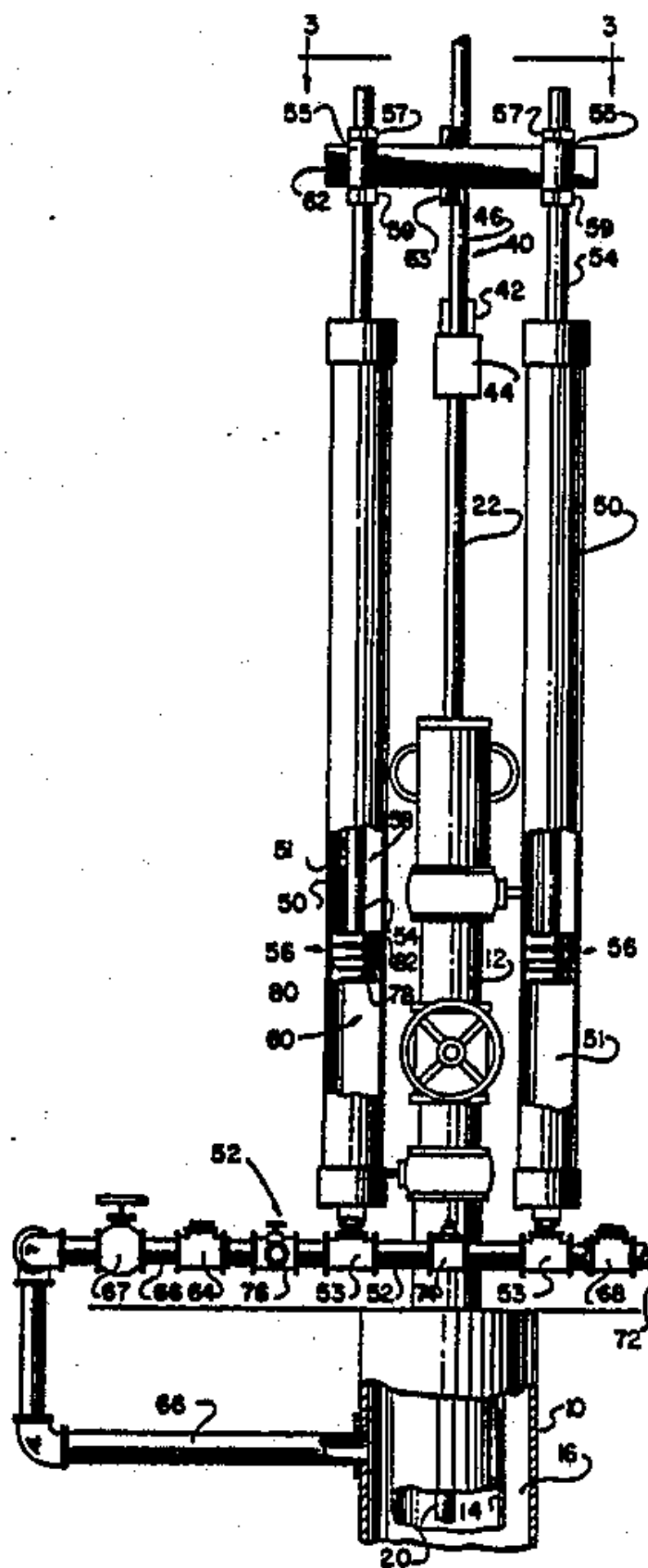
Family 88/100 - FAMPAT - ©Questel

Title

(US4529364)

Casing gas pump

Images



Publication numbers with kind code & date[US4529364](#)

A 1985-07-16 US4529364

**Abstract**

(US4529364)

A casing gas pump is reciprocated by the pump jack of an oil well. Push rods slidable within rigid vertical cylinders are connected by a bridle bracket to bridle cables depended from the pump jack horsehead. Vertical reciprocation of the horsehead moves pump leathers connected to the push rods up and down within cylinder bores. The cylinders are vertical, non-pivoting and fluidly connected to a header. The header is connected to the annulus of the well and to a gas line. Check valves prevent back flow from the header into the annulus and from the gas line into the header. The pump leathers form reciprocating pistons that are formed and assembled to avoid pulling a vacuum on the annulus.

Inventors

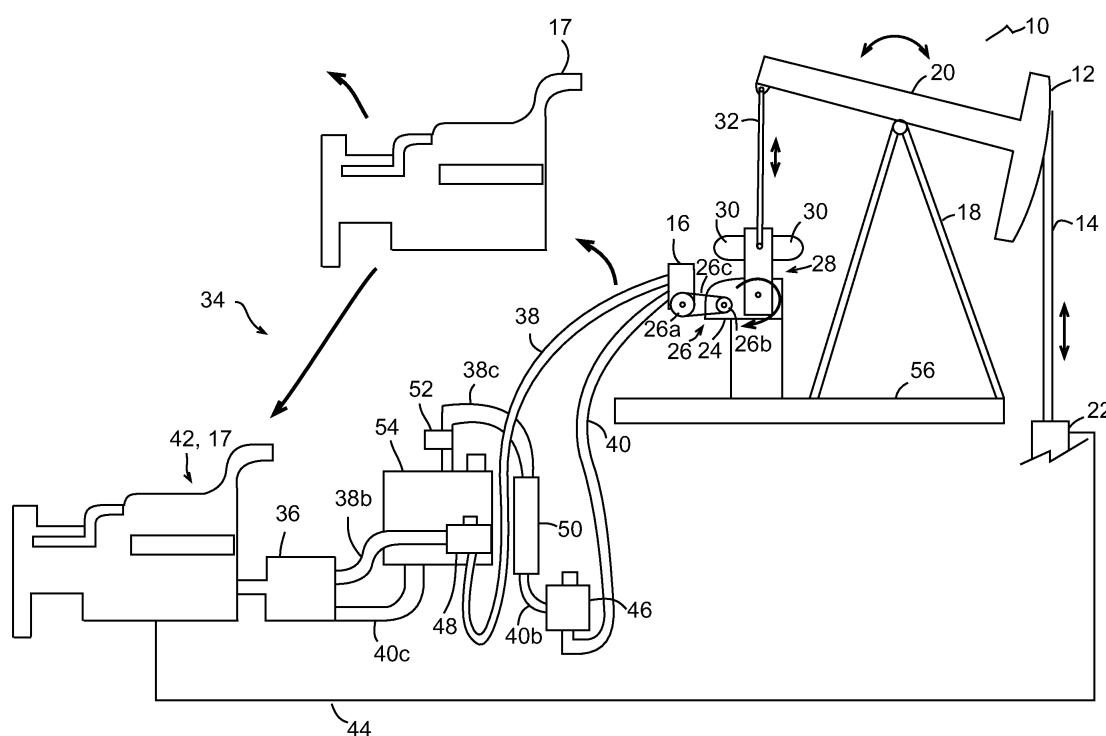
SCHAEFER LARRY

Family 89/100 - FAMPAT - ©Questel

Title

(US9938804)

Pump jack assembly

Images**Publication numbers with kind code & date**[US9938804](#)

B2 2018-04-10 US9938804

[US20150000930](#)

A1 2015-01-01 US20150000930

**Abstract**

(US20150000930)

A pump jack assembly has a horsehead mounted to rock on a frame; a polished rod connected to the horsehead; and a hydraulic motor connected to rock the horsehead. The pump jack assembly may have a crank assembly connected between the hydraulic motor and the horsehead, the crank assembly having one or more counterweights; a hydraulic pump; a fluid supply line and a fluid return line between the hydraulic pump and hydraulic motor; and a hydraulic brake on

the fluid return line. A method of providing a pump jack assembly includes replacing a non hydraulic pump jack motor, connected to rock the horsehead, with a hydraulic motor.

Inventors

HAARSTAD EVERETT ALLAN

HAARSTAD TYLER

ABRAM GORDON RAY

Latest standardized assignees - inventors removed

G E T HYDRAULICS

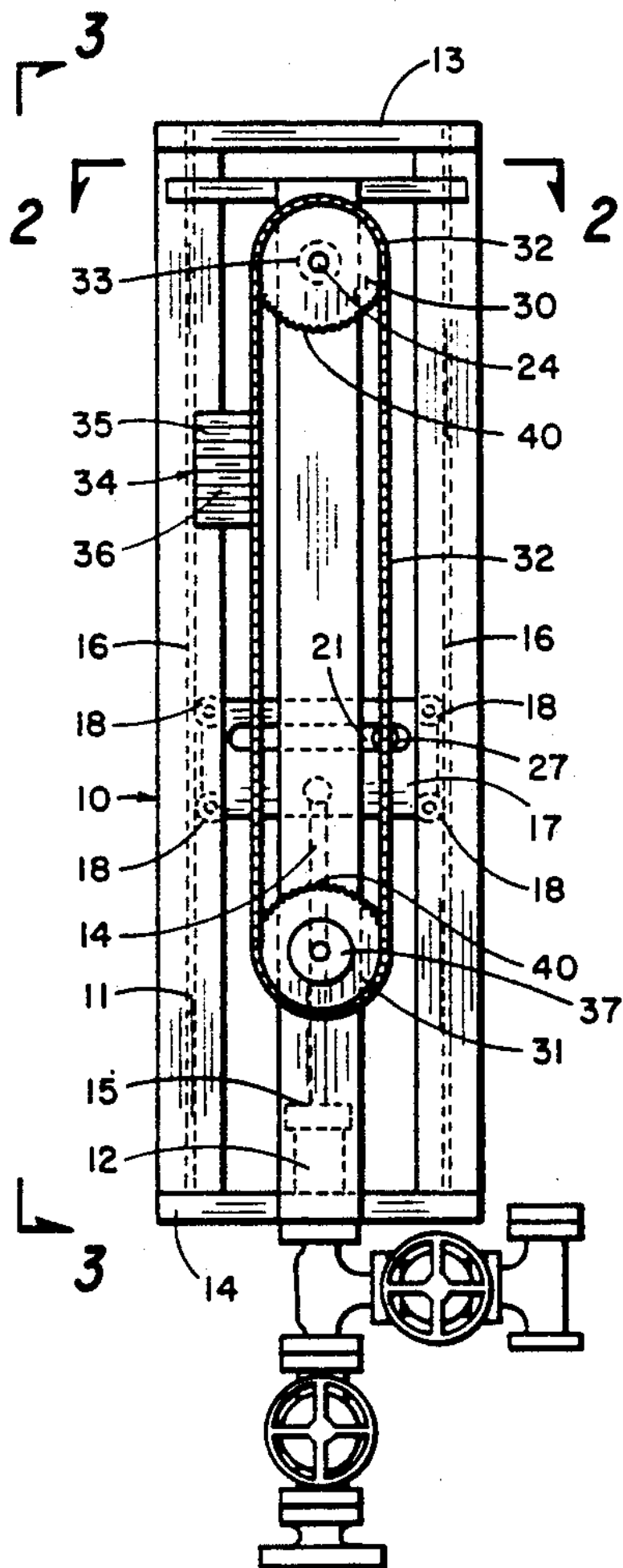
Family 90/100 - FAMPAT - ©Questel

Title

(US5027666)

Compact counter balanced pump jack

Images



Publication numbers with kind code & date

US5027666	A	1991-07-02	US5027666
CA2030127	A1	1991-06-30	CA2030127

**Abstract**

(US5027666)

A compact well jack is particularly suitable for reciprocating a long stroke rod pump and in situations wherein horizontal area around the well head is limited. The pump jack has a frame with elongated guides, a lifting bar slidably disposed between the guides, a horizontal slot in the lifting bar, pulleys carrying an endless belt having a stud affixed opposite to a counter weight and extending into the slot such that rotation of the pulleys vertically reciprocates the lifting bar and sucker rod string while the stud moves horizontally within the slot.

Inventors

FILICETTI A MICHAEL

Latest standardized assignees - inventors removed

CONOCO

Family 91/100 - FAMPAT - ©Questel

Title

(US4715240)

Pumping device

Images

Publication numbers with kind code & date

US4715240

A 1987-12-29 US4715240

**Abstract**

(US4715240)

The following specification discloses an apparatus and method for providing lifting motion on a substantially symmetrical and compact basis for a pump through a linkage, comprising two members pivotally coupled for relative movement driven by a gear reducer. The first member is driven in a rotational manner with the second member connected thereto being rotationally driven at the same angular velocity, but in the reverse direction thereto. The angular velocity of the members can be controlled by gears, a timing chain and sprockets, or other timed drive means. As the first member rotates with the second member moving around the pivotal connection point at the same angular velocity, a lift point or pump connection is moved in a reciprocating manner to provide lift. The members can be appropriately counterbalanced. The members can also be provided on either side of the gear reducer to provide dual lift points. If a chain is used for timing the members, the chain can be enclosed in a housing with an oil bath. In lieu of counterweights an air balance piston can be used to balance a rod pump.

Inventors

ERICH RICHARD R

Latest standardized assignees - inventors removed

BETHEL GEORGE F

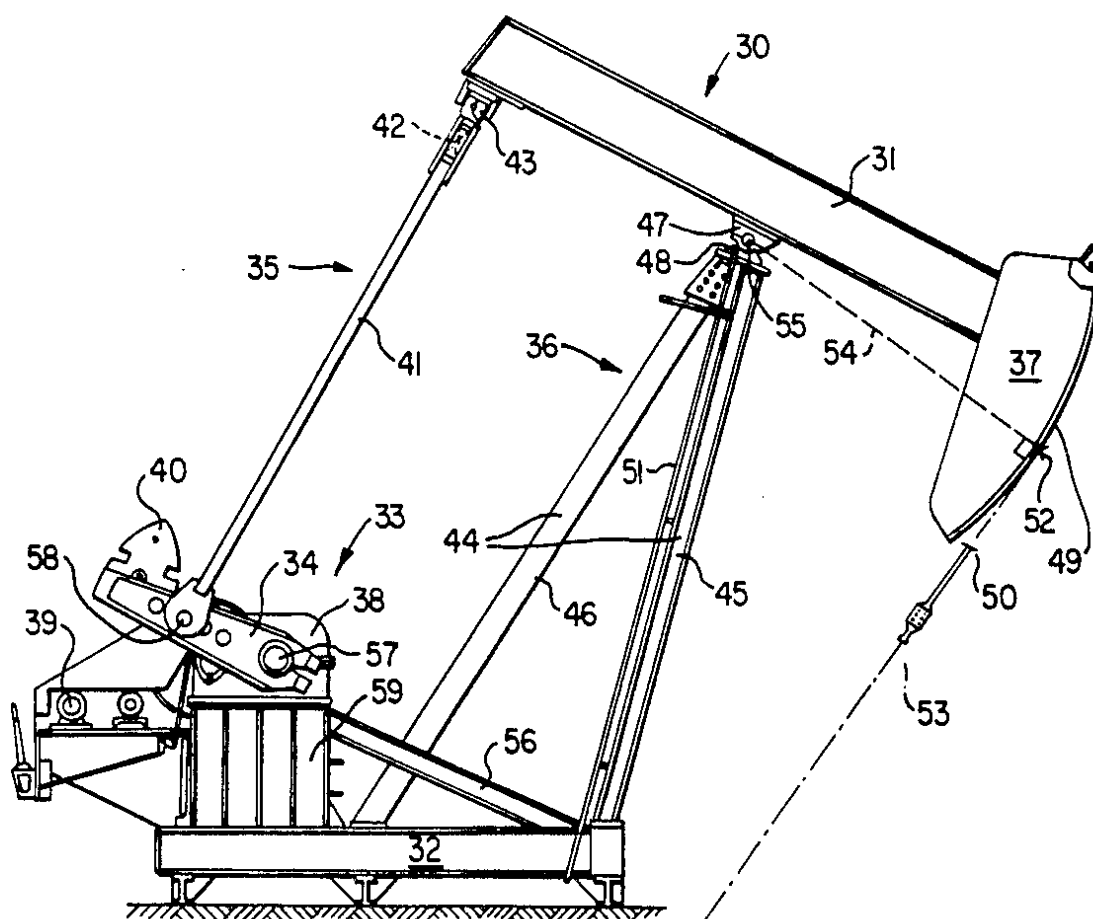
BETHEL PATIENCE K

Family 92/100 - FAMPAT - ©Questel

Title

(US4603592)

Off-vertical pumping unit

Images

Publication numbers with kind code & date

CA1210992	A	1986-09-09	CA1210992
US4603592	A	1986-08-05	US4603592

**Abstract**

(US4603592)

A pumping unit or pump jack, of the walking beam type of class I geometry, is provided which is arranged to permit relatively efficient pumping of a well inclined to the vertical, by suitable selection of beam support configuration and location, horsehead size, configuration and position, and position of the beam support fulcrum and beam length. Also provided is an adjustable pumping unit arranged to relatively efficiently pump wells ranging from about 0.degree. to 45.degree. off-vertical, in that the pitman is adjustable in length and the angle of inclination of the longitudinal axis of the samson post is adjustable.

Inventors

SIEBOLD QUENTIN R

LABUHN WALTER

Latest standardized assignees - inventors removed

LEGRAND INDUSTRIES

Family 93/100 - FAMPAT - ©Questel

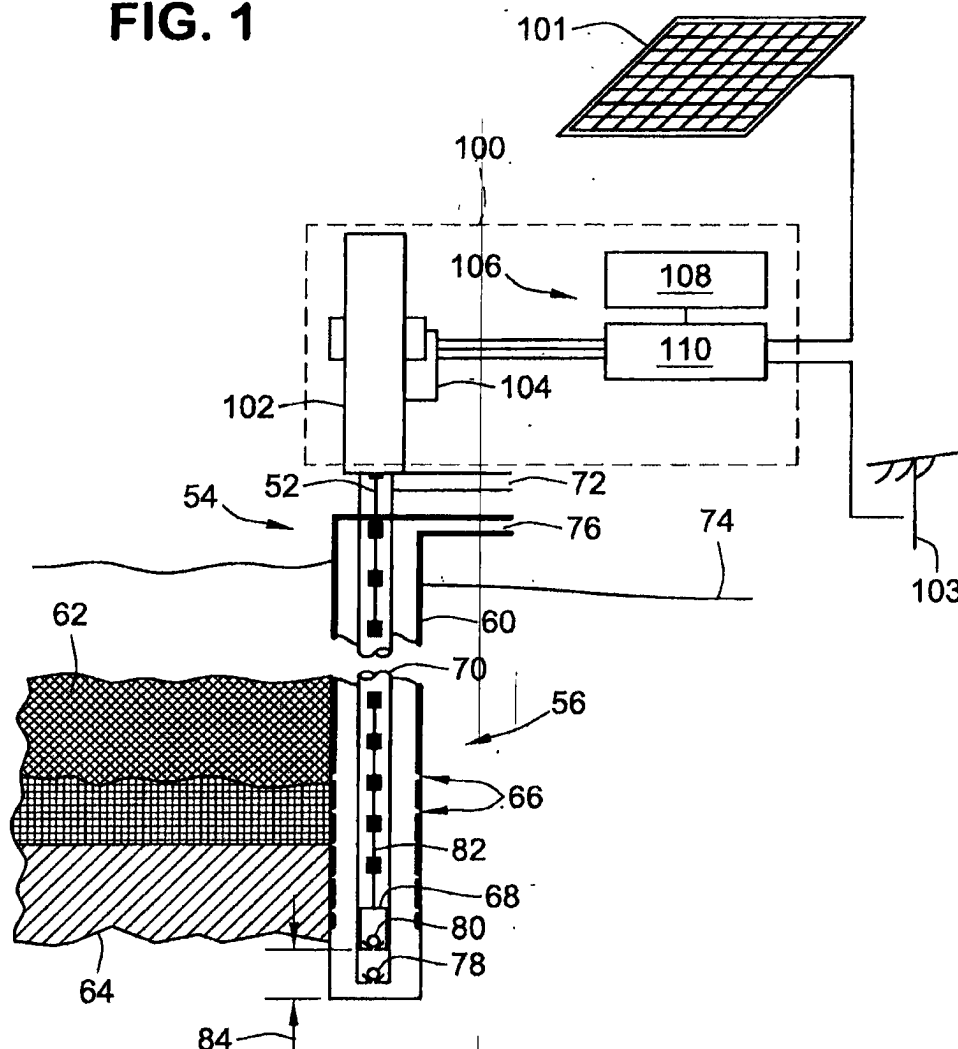
Title

(AU2013207648)

Cranked rod pump apparatus and method

Images

2013207648 19 Jul 2013

FIG. 1**Publication numbers with kind code & date**

AU2013207648

A1 2013-08-15 AU2013207648

**Abstract**

(AU2013207648)

An improved apparatus and method are provided, for pumping fluids, such as water and/or hydrocarbons, from a subterranean formation or reservoir, through use of a cranked rod pumping (cranked rod pumping) apparatus for imparting reciprocating substantially vertical motion to a rod of a sucker-rod pump having a pump stroke. The cranked rod pumping apparatus includes a motor driven cranked mechanical actuator arrangement. The cranked mechanical actuator arrangement includes a cable coupled to a substantially vertically moveable member which is attached to the rod of the sucker-rod pump for imparting and controlling vertical motion of the rod of the sucker-rod pump.

Inventors

GREGORY BENJAMIN J

BECK THOMAS L

PETERSON RONALD G

MACDONALD MICHAEL A

DRY MICHAEL D

Latest standardized assignees - inventors removed

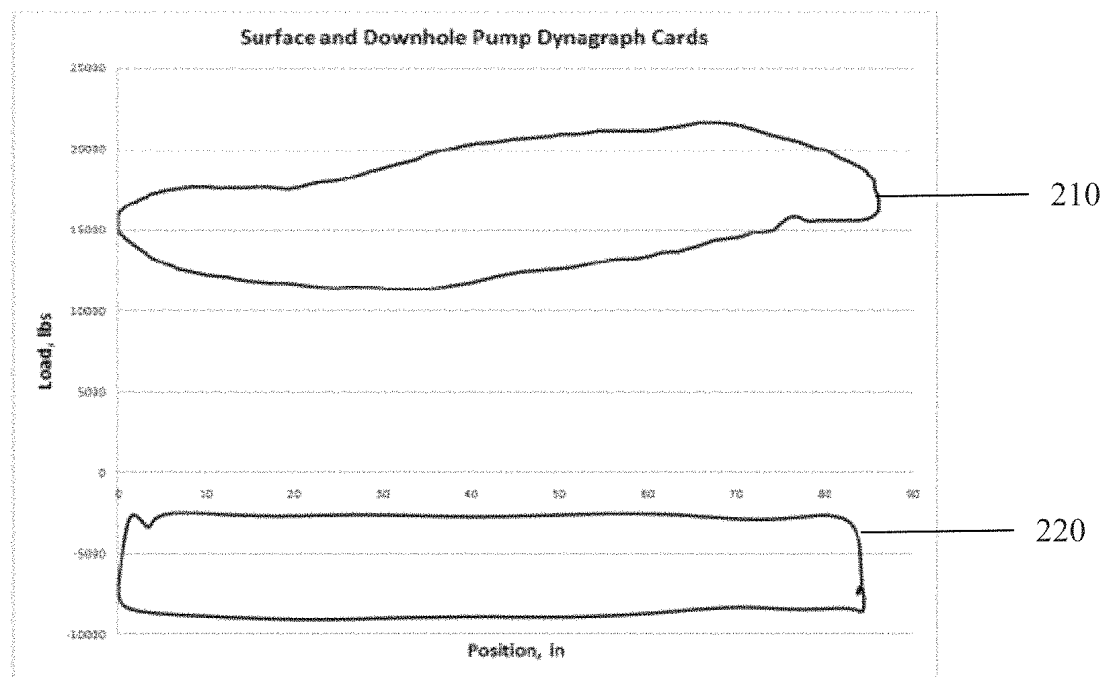
UNICO

Family 94/100 - FAMPAT - ©Questel

Title

(US10145230)

Systems and methods for real-time monitoring of downhole pump conditions

Images**Publication numbers with kind code & date**[US10145230](#) B2 2018-12-04 US10145230[US20160102542](#) A1 2016-04-14 US20160102542[CA2901994](#) A1 2016-04-10 CA2901994**Abstract**

(US20160102542)

Systems and methods for improved monitoring of downhole pump conditions may provide real-time monitoring, high accuracy, and low noise when monitoring downhole pump conditions. Systems for monitoring pump conditions may be coupled to any suitable sucker rod pump, and may gather desired data from the pump. The desired data may be gathered at several points-in-time during a pump stroke to provide real-time monitoring. A wave equation corresponding to the behavior of the downhole pump may be solved when the desired data is received to provide real-time monitor. In some embodiments, the wave equation may be solved by separating it into static and dynamic solutions. In some embodiments, the dynamic solution of the wave equation may be solved utilizing an integral-based method.

Inventors

DACUNHA JEFFREY J

Latest standardized assignees - inventors removed

HENRY RESEARCH & DEVELOPMENT

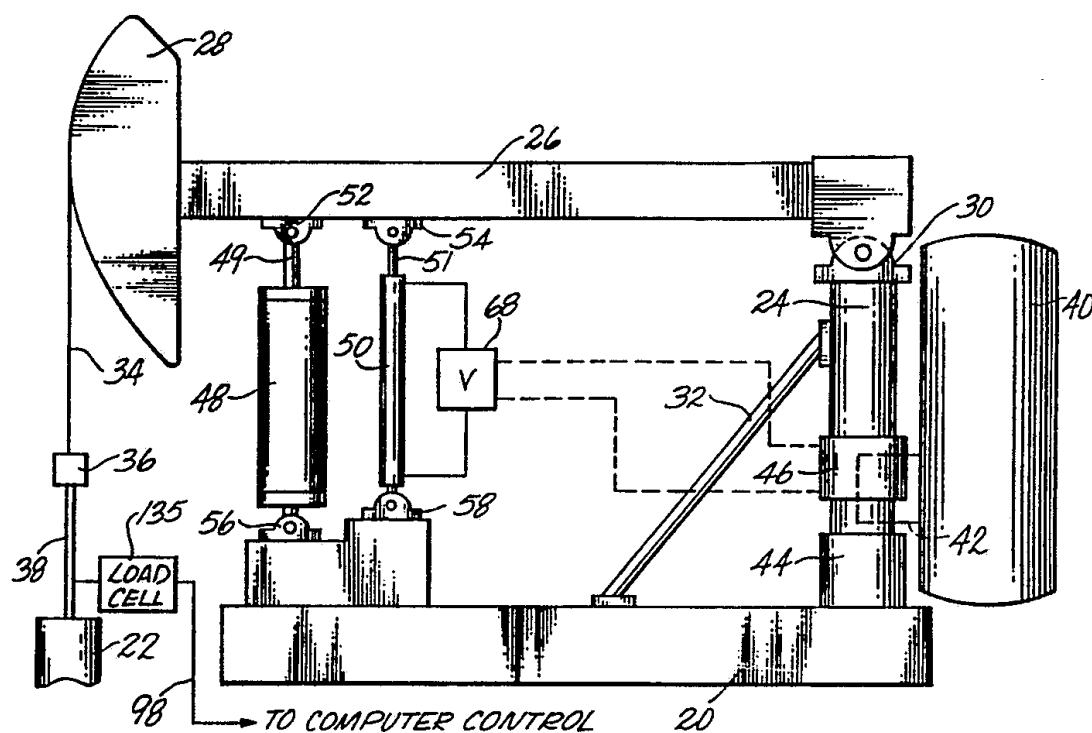
Family 95/100 - FAMPAT - ©Questel

Title

(WO9321442)

Well pump control system

Images



Publication numbers with kind code & date

US5281100	A	1994-01-25	US5281100
WO93/21442	A1	1993-10-28	WO9321442



Abstract

(WO93/21442)

A well pumping system includes a pivotally mounted walking beam (26) and 'horsehead' (28) connected to a downhole pump by a pump rod (38). A hydraulic lift piston and cylinder (50) and a pneumatic balance piston and cylinder (48) are connected to the walking beam. A process control computer (46) receives input information from a position sensor (96) indicating the displacement of the beam in its range of travel. The computer monitors and controls operation of the hydraulics and pneumatics as the pumping unit produces the lift necessary to extract fluid from the well. The computer controls acceleration and deceleration of the walking beam assembly in accordance with a desired acceleration-versus-time and deceleration-versus-time waveform. As a result, any sudden movement or directional change is eliminated, and the system reduces energy consumption and wear and tear on the pumping equipment.

Inventors

DIEDERICH RICHARD E

Latest standardized assignees - inventors removed

MC TECHNOLOGY

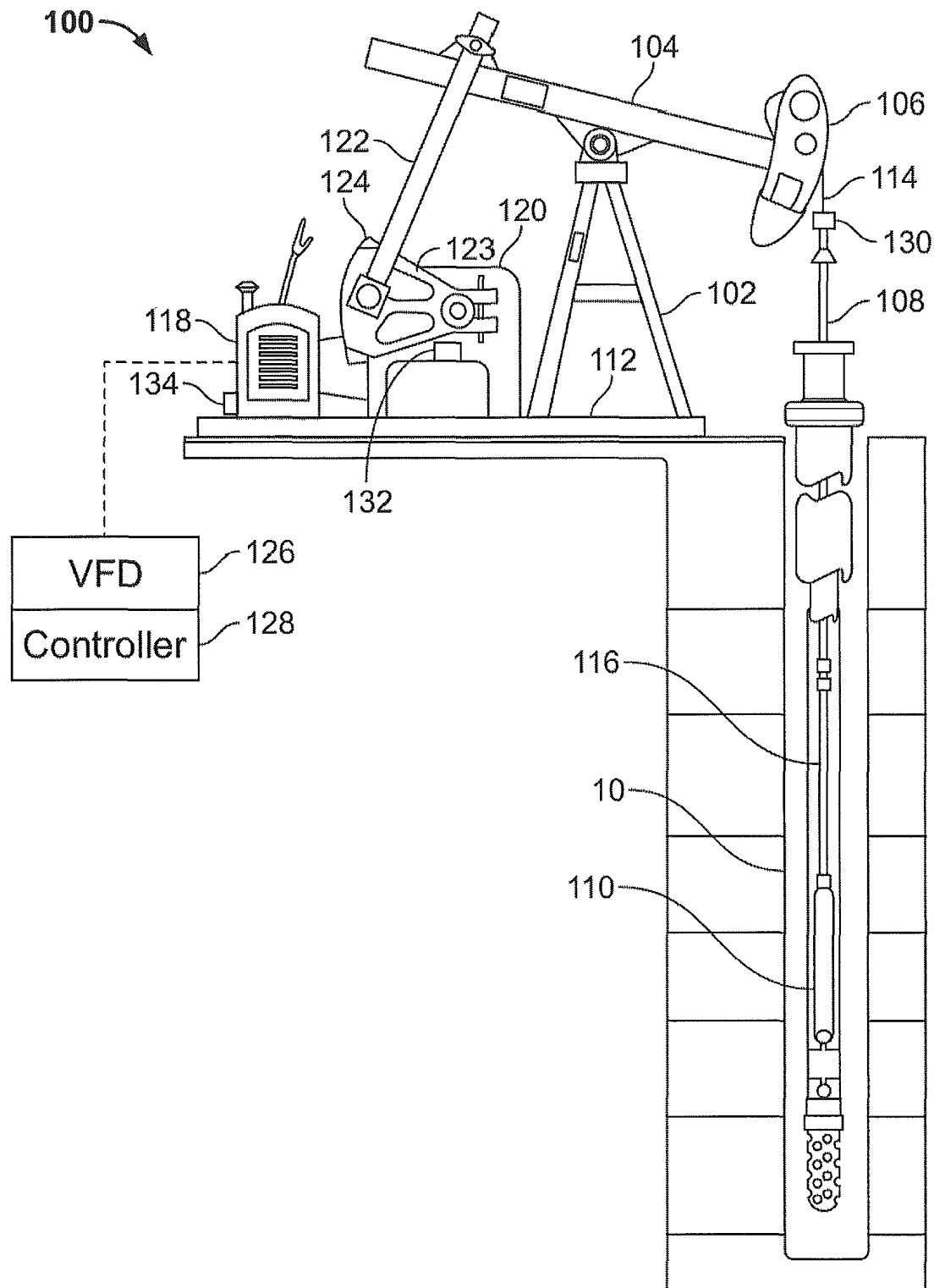
Family 96/100 - FAMPAT - ©Questel

Title

(US4474002)

Hydraulic drive pump apparatus

Images



Publication numbers with kind code & date

US10100623	B2	2018-10-16	US10100623
US20170002635	A1	2017-01-05	US20170002635



Abstract

(US20170002635)

A pumpjack is operated continuously over a sequence of two adjacent pump stroke cycles, by energizing an electric motor to operate the pumpjack over a first pump stroke cycle according to a motor speed profile over a plurality of discrete control periods within the cycle, while receiving sensory feedback from one or more sensors. In response to the feedback, and while continuing to operate the pumpjack, one or more speed adjustments are made to specific control periods, so as to alter the motor speed profile while continuing to operate the electric motor to drive the pump jack. The intra-cycle control

optimizes flow while reacting to detrimental and changing conditions.

Inventors

WILLIAMS BERTRAND JEFFERY

SAUERS II VICTOR

Latest standardized assignees - inventors removed

POWERUP NES

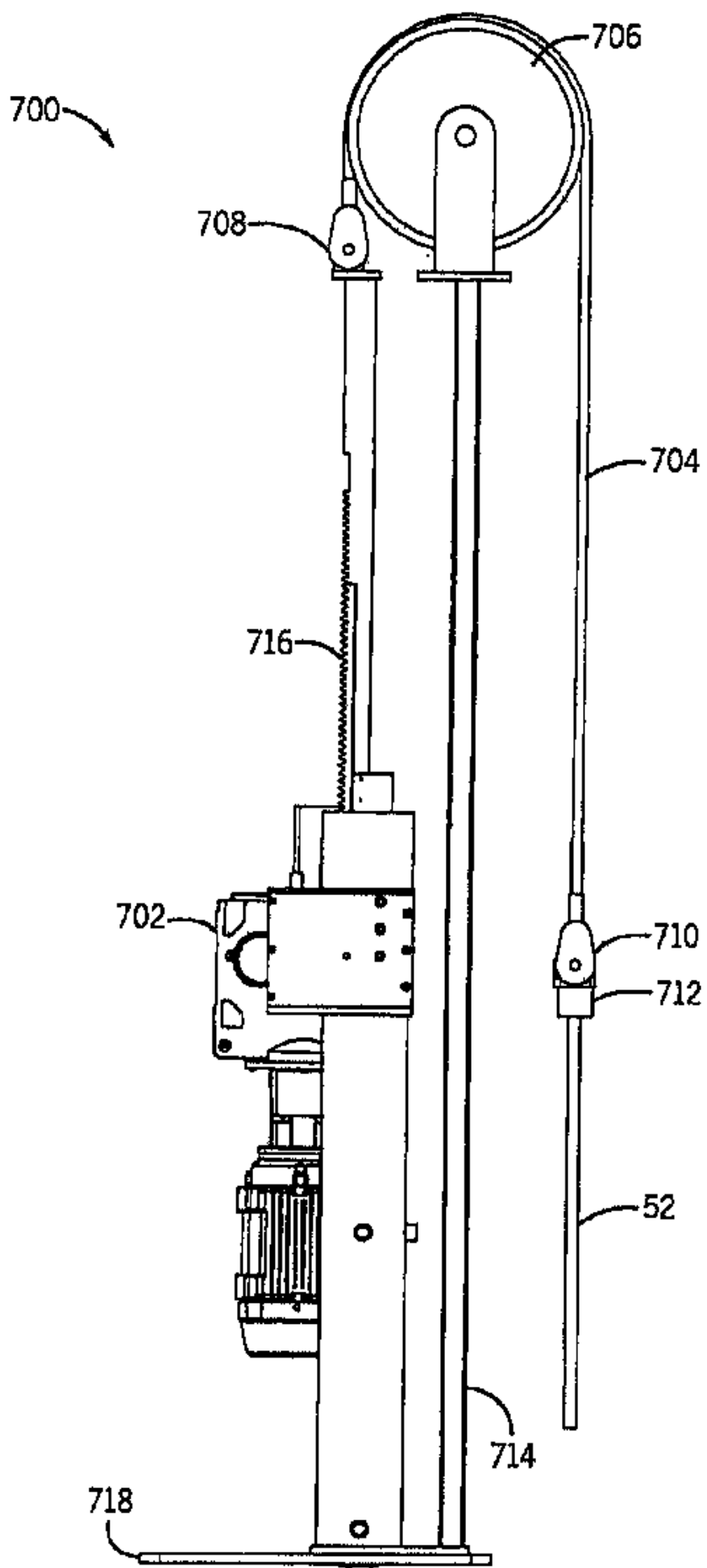
Family 98/100 - FAMPAT - ©Questel

Title

(CA2836596)

Linear rod pump apparatus and method

Images



Publication numbers with kind code & date

CA2836596

A1 2015-06-13 CA2836596

**Abstract**

(CA2836596)

An apparatus and method for pumping fluids, such as water and/or hydrocarbons, from a subterranean formation or reservoir, include a linear rod pump having a mechanical rack and pinion drive arrangement, adapted for attachment to a pumping mechanism, such as the polished rod at the top of a rod string in a hydrocarbon well. The rack gear, of the rack and pinion drive arrangement, is adapted for connection to a cable and pulley arrangement for imparting motion to the polished rod. The pinion gear does not translate with the rack gear, and is driven by a reversible motor for affecting up and down reciprocating motion of the rack gear and pumping mechanism. Some forms of the invention include a compressible gas counter-balance arrangement. Some forms of the invention include an electronic drive configured for dealing with electric power generated by the motor during a portion of the pumping cycle.

Inventors

GREGORY BENJAMIN J

PETERSON RONALD G

Latest standardized assignees - inventors removed

UNICO

Family 99/100 - FAMPAT - ©Questel

Title

(WO200909983)

A balance type oil beam-pumping unit

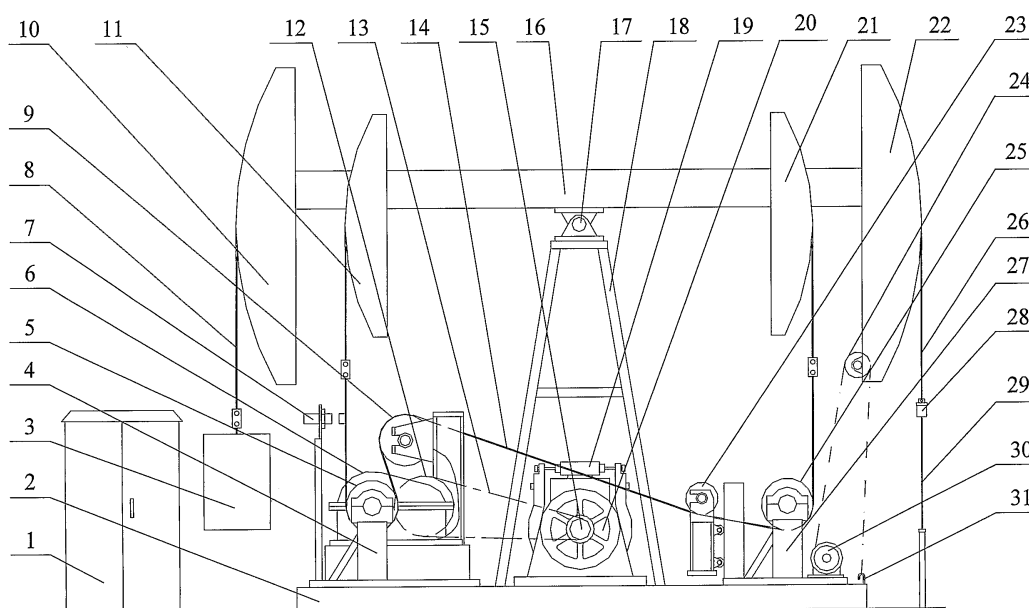
Images

图1 / Fig. 1

Publication numbers with kind code & date

WO2009/009983

A1 2009-01-22 WO200909983

CN201159158

Y 2008-12-03 CN201159158U

CN101298833

A 2008-11-05 CN101298833

**Abstract**

(WO2009/009983)

A balance type beam-pumping unit, comprising a walking beam(16), a support bracket(18), a rope suspender(28), a power machine(20), driving ropes(14), a driving wheel(5), a balance weight (3), a pumping rod (29). The walking beam(16) is mounted on the support bracket(18) through a support shaft(17), the support bracket(18) is mounted on the bracket(2), and the driving wheel(5) is fixed on a driving wheel bracket(4) of the bracket(2). The pumping rod (29) and the balance weight (3) are separately located at the sides of the beam's gyration central. The pumping rod (29) is connected with the walking beam(16) through the rope suspender(28), the balance weight (3) is connected with the walking beam(16), and the power machine(20) is connected with the driving wheel(5). One end of the driving rope(14) is connected with the rope suspender(28) which on one side of the beam's gyration central, or is directly fixed on the walking beam(16). The other end of the driving rope(14) passes through the driving wheel(5) and is connected with the rope suspender(28) which on the other side of the beam's turning central, or is directly fixed on the driving wheel(5) and then is connected with the rope suspender(28) which on the other side of the beam's gyration central, or the other end of the driving rope(14) is directly fixed on the driving wheel(5).

Inventors

JIN CHENGQUN

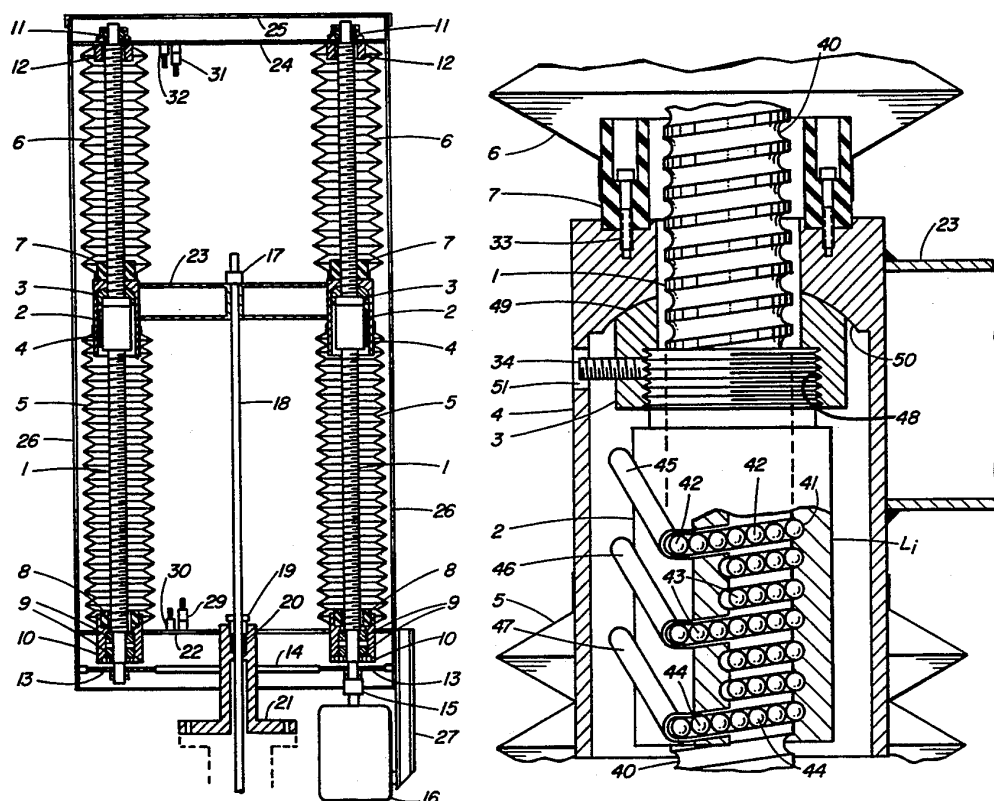
Family 100/100 - FAMPAT - ©Questel

Title

(US5404767)

Oil well pump power unit

Images



Publication numbers with kind code & date

US5404767

A 1995-04-11 US5404767



Abstract

(US5404767)

The oil well pump power unit is provided with a drive for reciprocating the sucker rod of an oil well pump. The rod (18) is fixed to a transverse beam (23) which is integral with ball nut housings (4), one at each end of the beam (23). The ball nuts (2) mounted in the housings (4) engage in a frictionless, ball bearing type engagement each a drive ball screw (1). The screws are driven concurrently by a drive motor. The advance in the art is in that this unit has a light weight and requires minimum driving power. Due to its light weight, it can easily be installed without special requirements for the foundation etc.

Also, the maintenance is simple as all moving components are entirely enclosed in a housing (26) or protected by bellows (5, 6).

Inventors

SUTHERLAND JAMES M