

T. H. KERR.
WELL DRILLING MACHINE.
APPLICATION FILED MAR. 19, 1909.

983,064.

Patented Jan. 31, 1911.

3 SHEETS—SHEET 1.

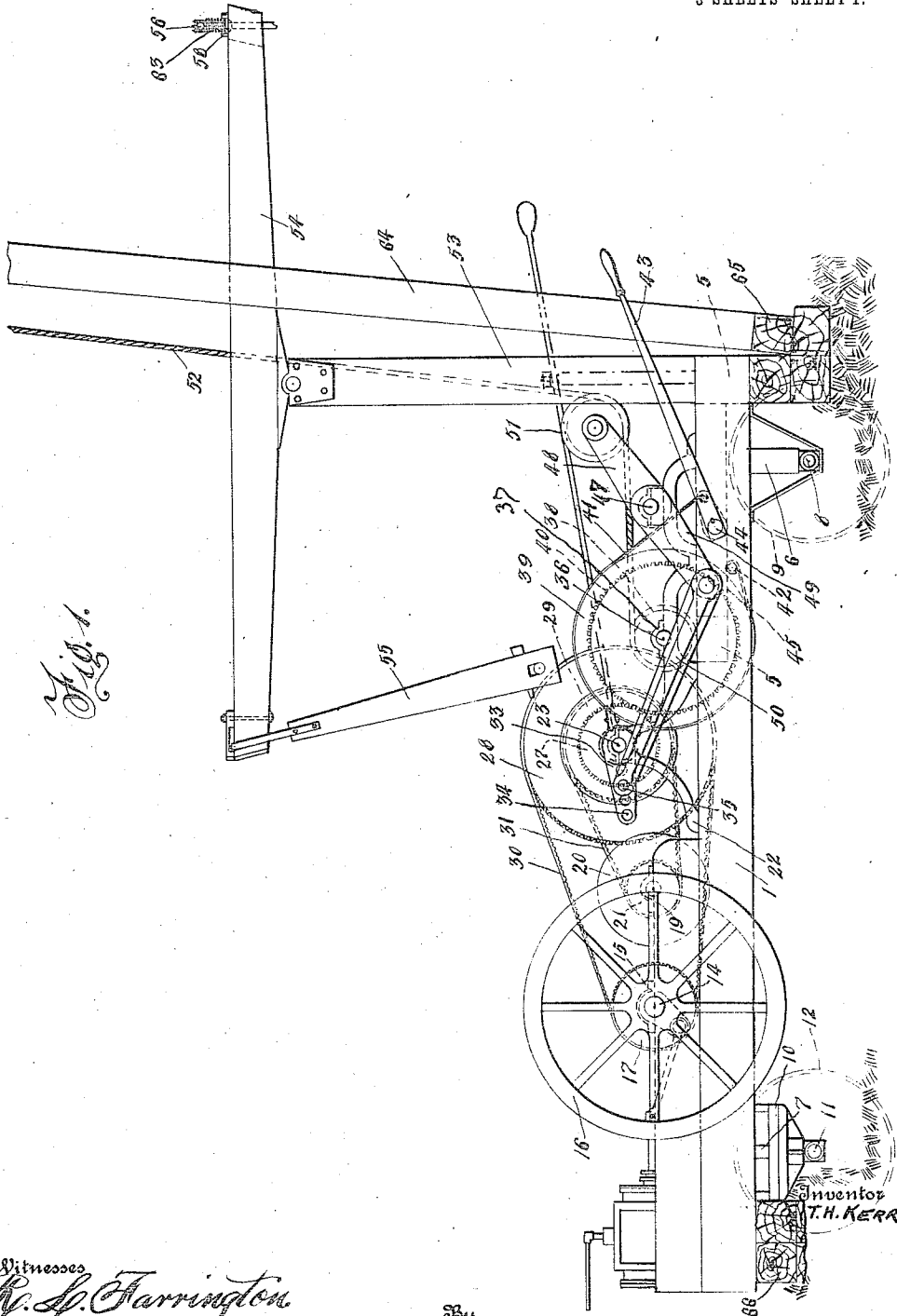


Fig. 1.

Witnesses
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334

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Inventor
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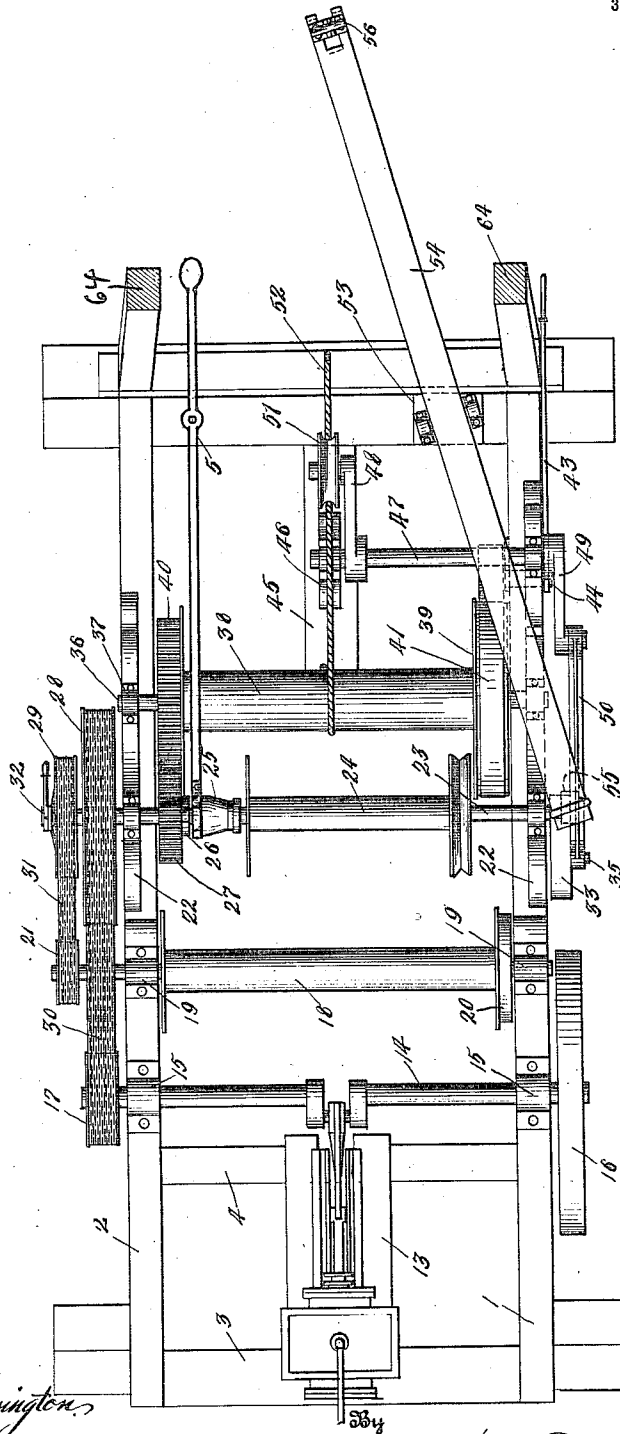
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

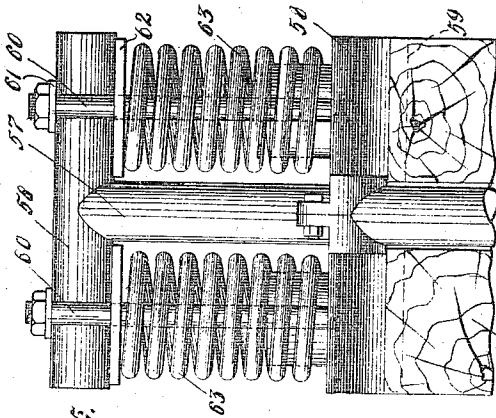


Fig. 5.

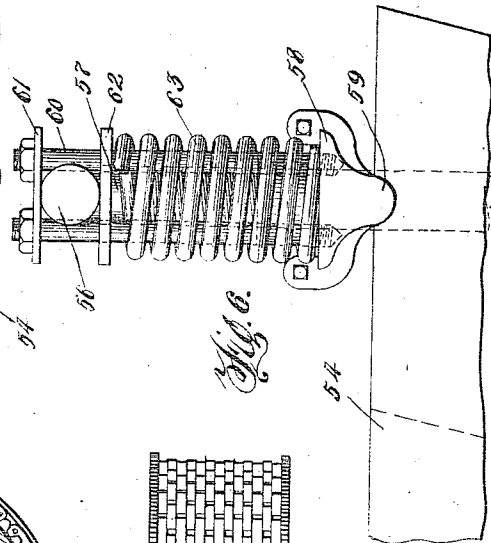


Fig. 6.

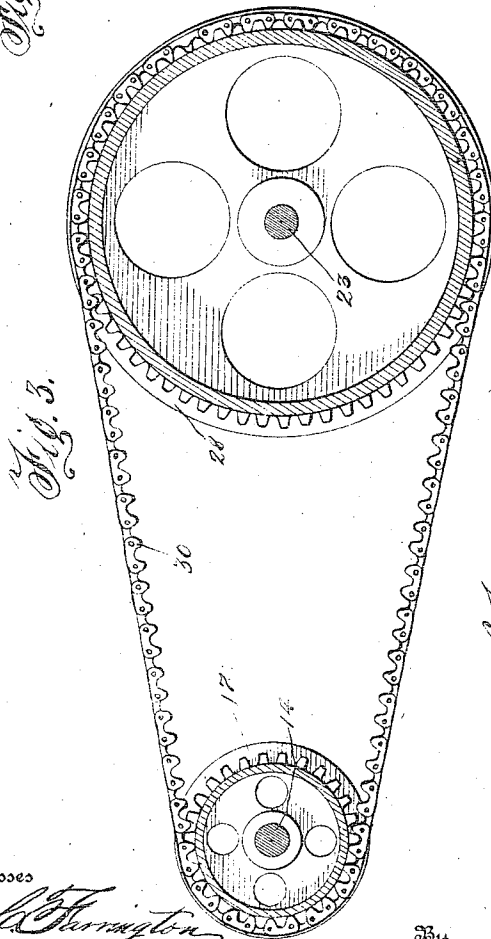


Fig. 3.

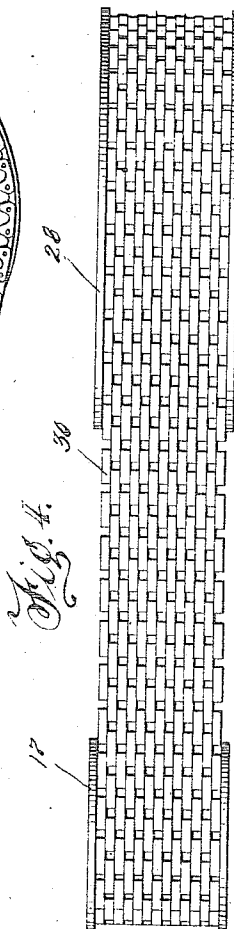


Fig. 4.

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UNITED STATES PATENT OFFICE.

THOMAS H. KERR, OF PITTSBURG, PENNSYLVANIA.

WELL-DRILLING MACHINE.

983,064.

Specification of Letters Patent.

Patented Jan. 31, 1911.

Application filed March 19, 1909. Serial No. 484,419.

To all whom it may concern:

Be it known that I, THOMAS H. KERR, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Well-Drilling Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to well drilling machines, and more particularly to that type of machine designed for drilling oil and gas wells.

The primary object of this invention is to provide a drilling machine for drilling well holes of great depth, the machine being constructed with a positive driving mechanism whereby lost motion is eliminated and a maximum degree of efficiency obtained with a minimum expenditure of fuel.

Another object of this invention is to provide an oil drilling machine of a portable nature that can be made permanent at the side of an oil well, whereby the machine can be safely used without subjecting the machine to the vibratory stresses and strains set up when the machine is in operation.

A still further object of this invention is to provide an oil drilling machine with an interchangeable walking beam and spudding mechanism.

With the above and other objects in view which will more readily appear as the invention is better understood, the same consists in the novel construction, combination and arrangement of parts to be hereinafter described and then claimed.

Referring to the drawings:—Figure 1 is an elevation of a machine constructed in accordance with my invention, the mast or derrick thereof being partly broken away, Fig. 2 is a plan of the machine with the mast or derrick in horizontal section, Fig. 3 is an enlarged side elevation of the chain drive forming part of the machine, Fig. 4 is a plan of the same, Fig. 5 is an enlarged front elevation of a tension device for the walking beam of the machine, and Fig. 6 is a side elevation of the same.

Referring to the drawings in detail, the reference characters 1 and 2 designate longitudinally extending bars and the reference characters 3, 4 and 5 indicate transversely extending bars together forming thereby a frame rectangular in contour and constitut-

ing the body-portion of the machine. The body-portion is supported upon the bolsters 6 and 7, the former being carried by the rear axle 8, the latter being provided with wheels 9. The front of the axle of the machine is indicated by the reference character 11 and supports the bolster 7, the said front axle 11 being provided with a fifth wheel 10 and further has mounted thereon the front wheels 12.

13 designates an engine of the ordinary and well known type which is supported upon the bars 3 and 4 for driving a crank shaft 14 journaled in bearings 15 mounted upon the bars 1 and 2.

16 designates a balance wheel carried by the crank shaft 14 adjacent to the bar, while 17 designates a flanged sprocket wheel carried by the crank shaft 14 adjacent to the bar 2.

18 designates a sand reel journaled in bearings 19 carried by the bars 1 and 2, said sand reel having a brake wheel 20 contiguous to the bar 1, also a small flanged sprocket wheel 21 contiguous to the bar 2.

22 designates bearings carried by the bars 1 and 2, and in said bearings is journaled a shaft 23. Upon the shaft 23 is mounted a reel 24, and slidably mounted upon said shaft is a clutch member 25 adapted to engage the hub 26 of a gear wheel 27 loosely mounted upon the shaft 23.

28 and 29 designate flanged sprocket wheels carried by the shaft 23 adjacent to the bar 2 and over said sprocket wheels and the wheels 17 and 21 travel sprocket chains 30 and 31, said chains being of a type calculated to provide a positive drive with a minimum amount of lost motion and energy.

32 designates a clutch mechanism used in connection with the sprocket wheel 29, which is loosely mounted upon the shaft 23, whereby said shaft can be operated independently of the sand reel 18.

33 designates a crank carried by the end of the shaft 23 adjacent to the frame 1, said crank having a plurality of openings 34, whereby a wrist pin 35 can be adjustably connected to the crank.

36 designates a shaft journaled in bearings 37 carried by the bars 1 and 2, said shaft supporting a large drum 38 having one end thereof provided with a brake wheel 39, while the opposite end is provided with a large gear wheel 40 adapted to mesh with the gear wheel 27. In connection with the

brake wheel 39, a brake band 41 is used, said band having one end thereof secured to the bar 1, as at 42, while the opposite end is connected to a brake lever 43, pivotally connected to the bar 1, as at 44.

45 designates a longitudinal frame arranged between the transverse bar 5, and upon the bars 45 and 1 are bearings 46 for a revoluble shaft 47. Upon the shaft 47 are mounted two cranks 48 and 49, the crank 49 being connected by a pitman 50 to the crank 33, while the crank 48 supports a revoluble grooved wheel 51 adapted to engage a drilling cable 52 attached to the drum 38.

53 designates a samson post carried by the transverse bar 5. Fulcrumed upon the samson post 53 is an angularly disposed walking beam 54, the rear end of said walking beam supporting a pitman 55 adapted to be connected to the crank 33, while the forward end of the walking beam supports a tension device adapted to be used in connection with a cable 52 and a temper screw (not shown).

56 designates a tee head, of a temper screw frame, said head extending above the forward end of the walking beam 54. Clamped upon the stem 57 of the temper screw frame is a cross head 58 adapted to rest in the transverse groove 59 of the walking beam 54. The cross head 58 is provided with two sets of upright guide pins 60, the pins of each set being connected at their upper ends by a fixed plate 61 and a movable plate 62, these plates confining the tee head 56 between the pins 60. Encircling said pins between the cross head 58 and the plate 62 are coil springs 63.

64 designates masts erected upon sills 65, said masts being suitably supported in an upright position by guy-wires (not shown).

66 designates foundation sills which are positioned beneath the ends of the bars 1 and 2 after the machine has been located, said sills bracing the machine and supporting the same similar to a separator machine. I prefer to move the machine into specially prepared roads or ditches whereby the bed of the machine will be in proximity to the ground and can be easily braced by the sills 66.

The elements 58 to 63 inclusive constitute a tension device adapted to relieve all excessive stresses and strains upon the drilling cable 52 when the same is in operation. The elements 47 to 51 inclusive constitute a spudding device which is used in starting a hole, said spudding device being generally used for the first twenty-five or fifty feet drill. After the hole has reached such a depth, the pitman 50 is disconnected from the crank 33, and the pitman 55 connected to said crank, whereby the walking beam 54 can be oscillated to raise and lower the drilling cable 52 in the hole previously

started by the spudding device. Through the medium of the elements 13, 32, 25 and 43, the operation of the machine can be easily controlled.

It is thought that the operation and utility of the machine will be fully understood without further description, and while in the drawings forming a part of this application there is illustrated the preferred embodiments of my invention, I would have it understood that the detail construction thereof can be varied or changed as to shape, proportion and manner of assemblage without departing from the spirit of the invention.

Having now described my invention what I claim as new, is:—

1. In a drilling machine, the combination with longitudinal bars, transverse bars connecting said longitudinal bars, and an engine supported by certain of said transverse bars, of an operating shaft revolubly mounted upon said longitudinal bars and adapted to be operated by said engine, a driven shaft revolubly mounted upon said longitudinal bars, a chain drive between said engine driven shaft and the driven shaft, a sand reel revolubly supported by said longitudinal bars, a chain drive between said sand reel and the driven shaft, a clutch mechanism for controlling the operation of said sand reel relative to the driven shaft, a cable supporting drum revolubly supported by said longitudinal bars and adapted to be driven by said driven shaft, a clutch mechanism for controlling the operation of said drum relative to said driven shaft, a samson post carried by one of said transverse bars, an angularly disposed walking beam fulcrumed upon said post, a pitman carried by one end of said walking beam and adapted to be connected to said shaft for oscillating said walking beam, a tension device carried by the opposite end of said walking beam, a spudding device supported by said bars and adapted to be actuated by the driven shaft, said spudding device comprising a shaft, cranks carried thereby, a pitman adapted to connect one of said cranks with the driven shaft, a revoluble grooved wheel carried by the other of said cranks for engaging a drilling cable of said drum, and means in connection with said drum for controlling the playing out of said cable.

2. In a drilling machine, the combination with longitudinal bars, transverse bars connecting said longitudinal bars, and an engine supported by certain of said transverse bars, of an operating shaft revolubly mounted upon said longitudinal bars and adapted to be operated by said engine, a driven shaft revolubly mounted upon said longitudinal bars, a chain drive between said engine driven shaft and the driven shaft, a sand reel revolubly supported by said lon-

5 longitudinal bars, a chain drive between said
sand reel and the driven shaft, a clutch
mechanism for controlling the operation of
said sand reel relative to the driven shaft, a
10 cable supporting drum revolubly supported
by said longitudinal bars and adapted to be
driven by said driven shaft, a clutch mecha-
nism for controlling the operation of said
drum relative to said driven shaft, a samson
15 post carried by one of said transverse bars,
an angularly disposed walking beam ful-
crumed upon said post, a pitman carried by
one end of said walking beam and adapted
to be connected to said shaft for oscillating
20 said driven shaft, a spudding device sup-
ported by said bars and adapted to be actu-
ated by the driven shaft, said spudding de-
vice comprising a shaft, cranks carried
thereby, a pitman adapted to connect one of
said cranks with the driven shaft, a revolu-
ble grooved wheel carried by the other of
said cranks for engaging a drilling cable of
said drum, and means in connection with
25 said drum for controlling the playing out of
said cable.

3. A well drilling machine comprising a
body-portion, an operating shaft journaled
thereon, revoluble reel shafts mounted upon
said body-portion, a chain drive mechanism
between said reel shafts and said operating 30
shaft, a cable supporting drum revolubly
mounted upon said frame and operatively
connected with one of said reel shafts, a
spudding shaft, a crank carried by one of
the reel shafts, a pair of cranks projecting 35
from the spudding shaft, a pitman adjust-
ably connected at one end to the crank on
the reel shaft and to one of the cranks of
the spudding shaft, a grooved wheel carried
by the other crank of the spudding shaft for 40
engaging the drilling cable carried by said
drum, a walking beam, and a pitman de-
pending therefrom and adapted to be con-
nected to the crank of the reel shaft.

In testimony whereof I affix my signature 45
in the presence of two witnesses.

THOMAS H. KERR.

Witnesses:

K. H. BUTLER,
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