

No. 781,234.

PATENTED JAN. 31, 1905.

L. D. SHRYOCK.  
WELL DRILLING MACHINE.  
APPLICATION FILED DEC. 16, 1903.

28 SHEETS—SHEET 1.

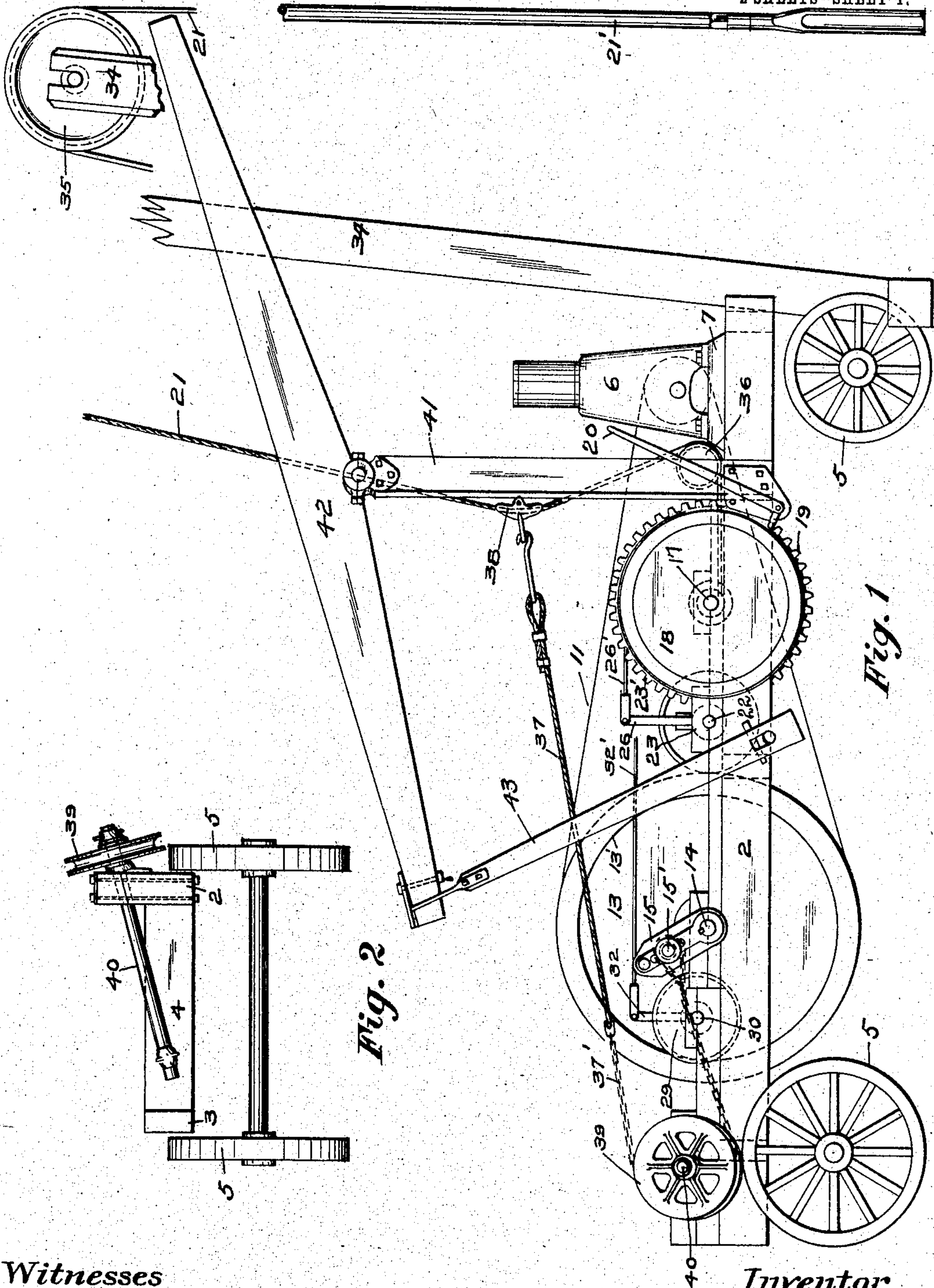


Fig. 2

Fig. 1

Witnesses  
Lindsay & B. Little  
Edwin Johnson

Inventor  
L. D. Shryock  
By J. M. Nesbit

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2 SHEETS—SHEET 2.

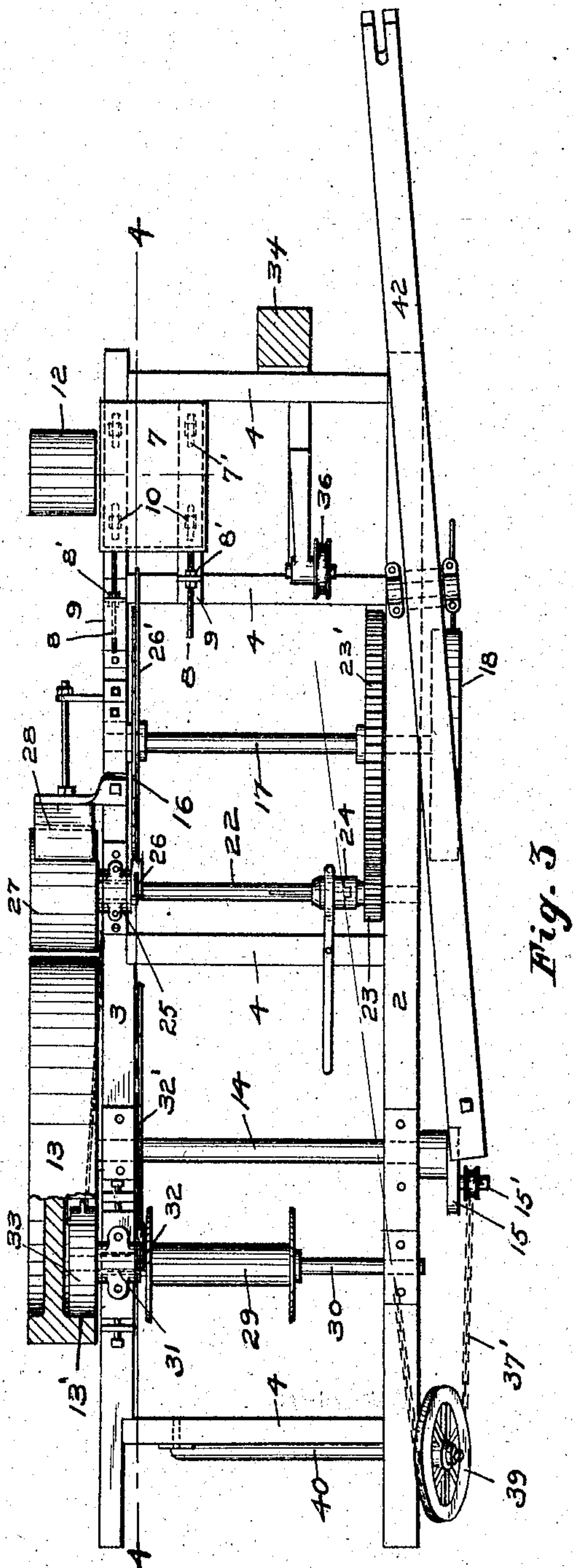


Fig. 3

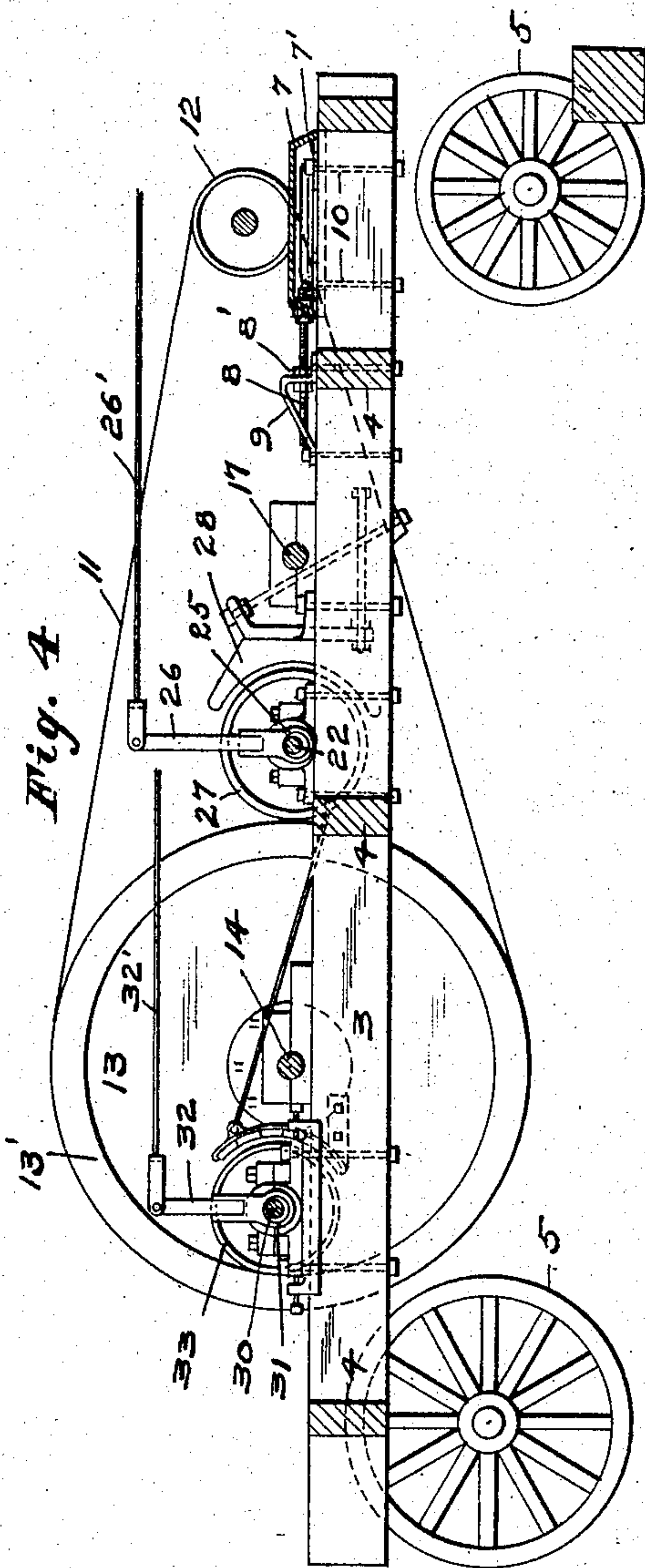


Fig. 4

Witnesses  
Lindsay det B. Little  
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# UNITED STATES PATENT OFFICE.

LEONARD D. SHRYOCK, OF MARIETTA, OHIO, ASSIGNOR TO LEIDECKER TOOL COMPANY, OF MARIETTA, OHIO, A CORPORATION OF WEST VIRGINIA.

## WELL-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 781,234, dated January 31, 1905.

Application filed December 15, 1903. Serial No. 185,212.

*To all whom it may concern:*

Be it known that I, LEONARD D. SHRYOCK, a citizen of the United States, residing at Marietta, in the county of Washington and State of Ohio, 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 drawings.

This invention relates to a portable machine for drilling oil, gas, and other deep wells; and the primary object is to provide effective mechanism of simple and improved construction for actuating the drilling-cable when spudding and to so arrange the machine that the spudding mechanism is a permanent part thereof, which may be conveniently connected and disconnected from the driving mechanism.

A further object is to improve and simplify the general construction of the machine.

In the accompanying drawings, Figure 1 is a side elevation of the improved machine, a portion of the mast or derrick being broken away; and Fig. 2 is a rear end view of the machine-frame, illustrating the position of the spudding-line sheave. Fig. 3 is a top plan view, partly in section; and Fig. 4 is a longitudinal sectional view on line 4 4 of Fig. 3.

Referring to the drawings, 2 and 3 are the longitudinal side members of the machine-frame, which are connected by cross members 4, the whole being mounted on ground-wheels 5.

6 is the engine, arranged at the forward end of the machine-frame on adjustable base 7, the adjustment being effected by threaded rods 8, projecting from said base through brackets 9 on the frame, with nuts 8' operating in conjunction with the brackets, as shown. The adjustment is further maintained by vertical clamping-bolts 10, which engage the slotted lower portion 7' of the base. This adjustment of the engine provides a convenient and ready means for tightening belt 11, running from driving-pulley 12 to band-wheel 13, the latter being carried by shaft 14, journaled transverse the rear portion of the frame

and provided at its opposite end with crank 15, which serves to operate both the spudding mechanism and the walking-beam.

16 is the drilling-cable reel, mounted within the frame on transverse shaft 17, the latter carrying wheel 18, upon which operates hand-brake 19, operated by lever 20, whereby the reel is controlled in paying out the drilling-cable 21. For winding or spooling the cable a shaft 22 is provided carrying pinion 23, which meshes with gear 23' on reel-shaft 17, the gearing being thrown in and out of rotational connection with shaft 22 by clutch 24. The opposite end of shaft 22 is journaled in eccentric bearing 25, operated by lever 26 and rod 26', and on the end of the shaft is pulley 27, adapted to be thrown in and out of frictional engagement with band-wheel 13 by said bearing, whereby the shaft is rotated for the reeling operation. In moving away from band-wheel 13 pulley 27 may be thrown into engagement with the fixed brake-shoe 28 for checking its rotation when necessary.

29 is the sand-line reel, mounted on transverse shaft 30, one end of the latter being journaled in eccentric bearing 31, operated by lever 32 and rod 32', and on the extremity of said shaft is pulley 33, adapted to be moved by said bearing into frictional engagement with inner periphery 13' of band-wheel 13. Shaft 30 is so positioned that this frictional engagement is had at a point rearward from shaft 14, so that the pull of driving-belt 11 on the band-wheel operates to maintain and render effective said engagement, whereas if the arrangement were such as to create a tendency on the part of the band-wheel when under strain to pull away from pulley 33 the friction-drive would be far less effective.

34 is the pole mast or derrick, positioned at the front of the machine and braced by guys (not shown) and carrying crown-pulley 35, from which drilling-cable 21 depends to the drilling-tools 21', the cable passing from the reel to a sheave 36, arranged at any convenient point on the front portion of the machine, and from thence to the crown-pulley.

For reciprocating the drilling-cable in the



operation of spudding, as when starting the hole, a spudding-line 37 is connected to the cable by shoe 38, through which the cable moves freely, said line passing over sheave 39, journaled on shaft 40, the latter being at the rear of shaft 14, and from this sheave said line detachably connects with wrist 15' of crank 15. Owing to the diagonal pull of line 37, sheave 39 is arranged at angle to the plane of the machine-frame; being approximately in the plane of the line of pull. The portion of line 37 operating over sheave 39 consists, preferably, of a section of chain 37', which withstands the frictional wear much better than rope. Thus a most simple, direct, and effective operation is provided for the spudding mechanism. As I claim to be the first to provide an angularly - arranged power-transmitting element intermediate the driving-crank and the drilling cable to compensate for the diagonal pull of the spudding-line I do not confine myself to the embodiment thereof herein disclosed.

The samson-post 41 is mounted on the machine-frame in the usual manner for supporting the walking-beam 42, which operates the cable for the deeper drilling in manner well understood in the art. The beam-pitman 43 operatively connects with crank-wrist 15' for such use, the spudding-line having been disconnected therefrom and remaining inactive while drilling with the beam.

I do not confine myself to the exact structural features herein shown and described, as the several features of the invention may be variously embodied without departing from the spirit and scope thereof as defined by the appended claims.

I claim—

1. In a well-drilling machine, the combination of a drilling-cable, an actuating member, and power-transmitting mechanism connecting the cable and said member and constructed and arranged to exert a pull on the actuating member in direction substantially in the plane of movement of the latter and to exert a pull on the drilling-cable in direction oblique to said plane of movement.

2. In a spudding attachment for a well-drilling machine, the combination of an actuating member, a spudding-line connected at one end thereto, and guiding means for the line constructed and arranged to direct the line to said member in substantially the plane of movement of the latter and to direct said line to the

drilling-cable in a plane oblique to the plane of movement of the actuating member.

3. In a spudding attachment for a well-drilling machine, the combination of an actuating member, a spudding-line connected at one end thereto and adapted to be reciprocated thereby, and a sheave over which the line passes, said sheave intersecting the plane of movement of the actuating member and arranged obliquely thereto.

4. In a well-drilling machine, the combination of a frame, a shaft journaled therein having a crank, a drilling-cable at one side of the plane of movement of the crank, a line connected at one end to the crank and at its opposite end to the drilling-cable, and guiding means for said line constructed and arranged to direct the line to the crank substantially in the plane of movement thereof.

5. In a spudding attachment for a well-drilling machine, the combination of an actuating-crank, a spudding-line connected at one end thereto, and a guiding-sheave for said line rotatable in a plane oblique to the plane of rotation of the actuating-crank.

6. In a spudding attachment for a well-drilling machine, the combination of an actuating-crank, a spudding-line connected at one end thereto, and a guiding-sheave for said line at the rear of the said crank and rotatable in a plane oblique to the plane in which the crank rotates.

7. In a drilling-machine, the combination of a shaft having a crank, a drilling-cable in front of the shaft, a line operatively connecting the crank and cable, and a guiding-sheave for said line disposed in a plane oblique to said shaft and at the rear thereof.

8. In a well-drilling machine, the combination of a shaft having a crank, a drilling-cable at one side of the plane of movement of the crank, and power-transmitting mechanism connecting the cable and said crank and constructed and arranged to exert a pull on the crank in direction substantially in the plane of movement of the latter and to exert a pull on the drilling-cable in direction oblique to said plane of movement.

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

LEONARD D. SHRYOCK.

Witnesses:

J. M. NESBIT,  
ALEX. S. MABON.