J. Greives,

Derrick.

No. 48,808. Patented July 18, 1865.

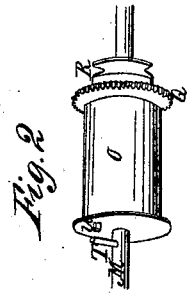

Fig. 2

Fig. 3

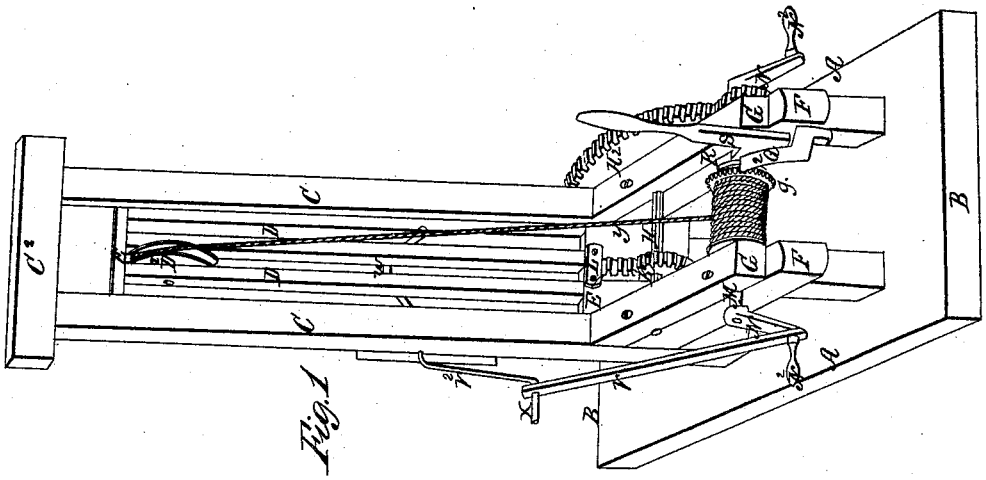

Fig. 1

Witnesses;
J. J. Parker
Ezar Parker

Inventor;
John Greives

UNITED STATES PATENT OFFICE.

JOHN GREIVES, OF BROOKLYN, NEW YORK.

IMPROVED PORTABLE DERRICK.

Specification forming part of Letters Patent No. **48,808**, dated July 18, 1865.

To all whom it may concern:

Be it known that I, JOHN GREIVES, of Brooklyn, in the county of Kings, in the State of New York, have invented a new and useful Portable Derrick for Oil-Wells, &c.; and I hereby declare that the following is a full and clear description of the same, reference being had to the annexed drawings and the letters marked thereon, making a part of this specification, in which—

Figure 1 is a perspective view of my portable derrick. Fig. 2 is a section of the spool for winding rope on. Fig. 3 is a view of screw-flanged lever.

My portable derrick operating the tools for drilling oil-wells is made in the following manner: Two strong sills are framed, about eighteen inches apart, into cross-pieces. The sills are five by six inches and six feet long. Near one end of these sills are framed two upright posts ten feet long, standing parallel with each other, with cap framed over the top. These posts have grooves two inches in width and one inch and a half deep, in which moves a sliding frame made of two long pieces of timber, two and a half by four inches, framed into two pieces of timber four by four inches square and eighteen inches long, with projections to suit the before-mentioned grooves in upright posts.

Framed into the long part of bottom frame are two posts about two feet long. On these, and into the aforesaid upright posts, parallel with aforesaid bottom frame, are framed two pieces five by five inches. Upon these said pieces two arbors are hung in suitable bearings. On one of these arbors, next to upright posts, is a small cog-wheel or pinion with one-third of the circumference without cogs. This wheel is made movable sidewise by a slot in said arbor and gib in wheel.

Fastened to the lower end of above-mentioned sliding frame is a rack corresponding with cogs in aforesaid wheel and gearing therewith. On the out end of this arbor is a larger cog-wheel—say from fifteen to eighteen inches in diameter—firmly fastened. In this cog-wheel a small pinion works. Fastened on the other arbor above mentioned, to the outer ends, are cranks and handles, more fully explained hereinafter. Upon this arbor a spool revolves at will, or is driven by pin in the end of arbor and spool, when desired. This spool is about fifteen inches long and the arbor eighteen, leaving a play of three inches on arbor. The heads are made two feet in diameter, thirteen inches apart. The balance of the spool-barrel is filled with a ratchet or notched wheel and a grooved wheel seven or eight inches in diameter fastened securely to it. A screw-flange lever is suspended on a pin or bolt in same timbers with aforesaid arbors, so that the screw-flange part works neatly and smoothly in aforesaid grooved wheel, thereby moving the spool on the arbor back and forth tight against said arbor-timbers, or in contact with the before-mentioned pins in arbor and spool, or between them both, as desired. A pawl or arm is also suspended to a pin or bolt to same timbers as lever, so that it rests firmly on the ratchet. This pawl reaches over the pin or center of lever-head, so that a pin in the said lever-head strikes the under side of pawl when the lever is thrown down, lifts off the ratchet, and lets the spool turn. To this said spool the cord or rope is fastened and wound up, with the other end on a pulley in the upper part of before-mentioned sliding frame between upright posts. This pulley is set out as far as possible, so that the rope hanging in its groove will be out from the face of upright posts.

To the front of the upright posts a bell or yoke crank is hung in suitable bearings, the center being in line with pulley. To this crank an arm is fastened, reaching out over the end of the spool-arbor, and has a wrist, to which a pitman is suspened, and works on the crank of spool-arbor. This arrangement is for working a pump for testing wells. An attachment is put to the cap of derrick for guiding tubing while being set, and the tools when being put into and taken out of wells.

A A represent the main sills; B B, cross-pieces; C C, main upright posts; C^2, cap for same; D D, long pieces of sliding frame; D^2, pulley in the said frame; E E, end pieces; F F, the bearers on which main arbor is hung; G G, caps for same; H, main arbor; H^2, large wheel on the out end of arbor; K, lifting-wheel on main arbor; L, the rack on sliding frame in which said wheel gears; M, the spool-arbor;

M^2, pinion on said arbor; N, cranks; N^2, handles on said cranks; O, the spool on which the rope is wound; Q, the ratchet; Q^2, pawl; R, the grooved wheel; S, the screw-flanged lever; T, the pin in end of spool-arbor; U, pin in end of spool; V, pitman between crank and arm; W, yoke-crank; V^2, arm; X, wrist on same; Y, rope; Z, pin or arm in lever-head.

The operation of my portable derrick for working drilling-tools is as follows: A strong rope, Y, is fastened to the spool O on arbor M. The lever S is raised up so as to lock pins T and U together. Lifting-wheel K being slipped on arbor M to one side and motion given to spool-arbor M by handles N^2 or pulleys, the rope is wound on spool, leaving the end to which the tools are fastened over the pulley D^2 in sliding frame D D, the said sliding frame being dropped down on cross-piece between the upright posts, on which a piece of gum is placed to prevent a solid stroke. When the rope is thus placed and tools attached ready for use the tools are easily let into the well by the action of the lever S on the grooved wheel R, pressing the spool against the arbor-bearer. The pin or arm Z comes in contact with under side of pawl and lifts it loose from ratchet. The pawl may have a handle for this purpose attached to it. The tools being let into the well ready for use, the lifting-wheel K slipped in gear with rack on sliding frame D D, lever S is set so as to relieve the shaft or arbor M and allow it to move freely. The motion applied to said arbor M, the sliding frame D D is raised up by the action of the lifting-wheel K, in connection with gear-wheels, to any desired height. The cogs are made to work and let drop free by the rack passing off the cogs of said lifting-wheel, and as the motion continues the cogs on said lifting-wheel come alternately in gear and lift the sliding frame D D and let it drop, as before. The spool being held fast by the pawl Q^2, the tools are raised and dropped in the most desirable manner and with great ease, thus making great speed in drilling by having a clear drop of the tools. The said uprights C C are framed, so as to be easily taken apart, by keys and wedges and joint-bolts.

After having thus fully described my invention for working drilling-tools for oil-wells, I do not confine myself to the exact proportions and arrangements, as they may be varied. For instance, I may place a third arbor, with a large wheel gearing with pinion M^2, on spool-arbor and put the spool on it, so as to have more power for raising tools; but

What I claim as new in my invention, and desire to secure by Letters Patent, is—

The sliding frame D D, lifting-wheel R, arbor H, large wheel H^2, in combination with the arbor M, pinion M^2, spool O, lever S, ratchet Q, and pawl Q^2, in the manner and for the purpose set forth.

This specification signed and witnessed this 8th day of February, 1865.

JOHN GREIVES.

Witnesses:

J. J. PARKER,

J. D. PARKER.