

No. 652,004.

Patented June 19, 1900.

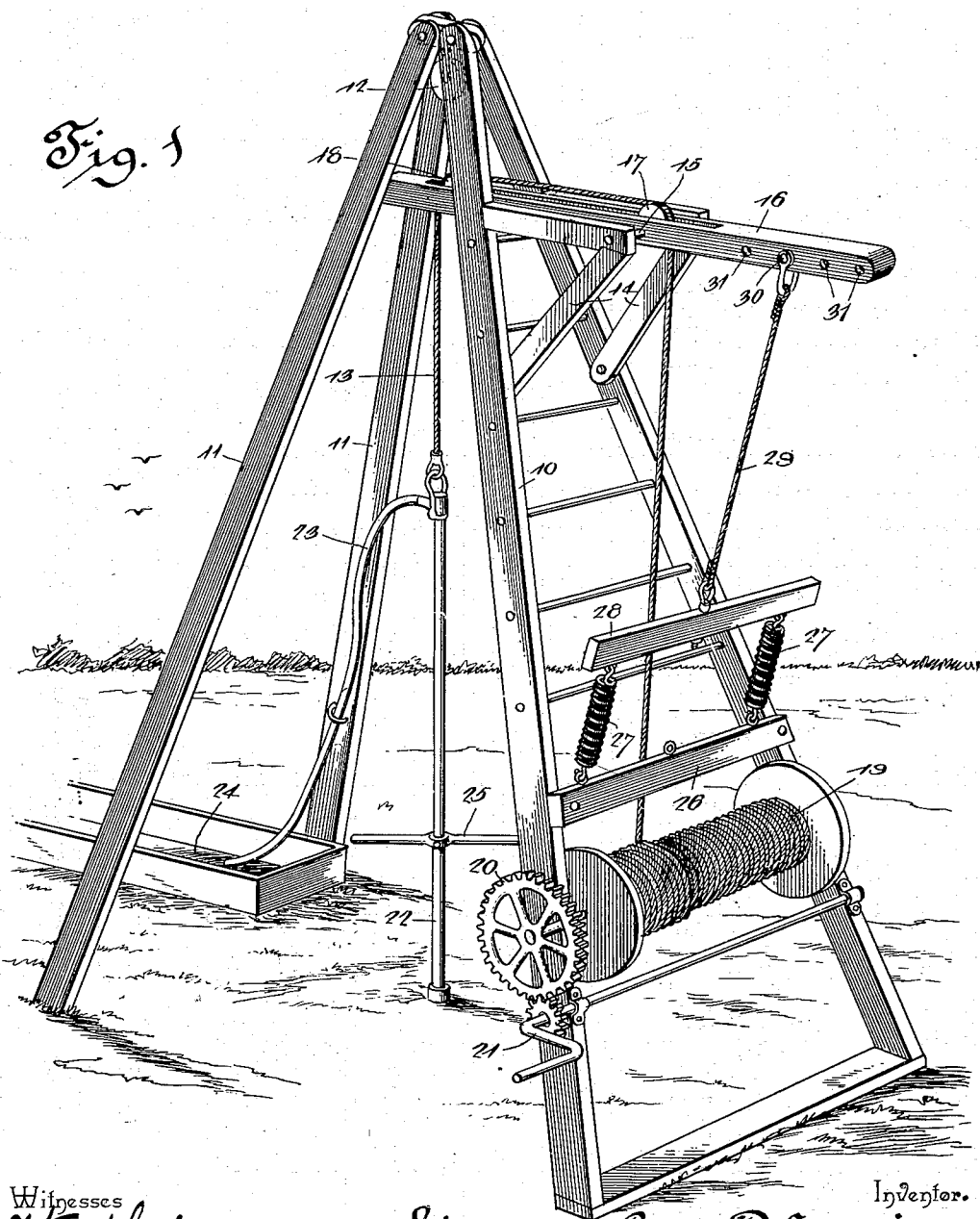
G. D. LOOMIS.
HAND WELL DRILLING MACHINE.

(Application filed June 17, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1



Witnesses

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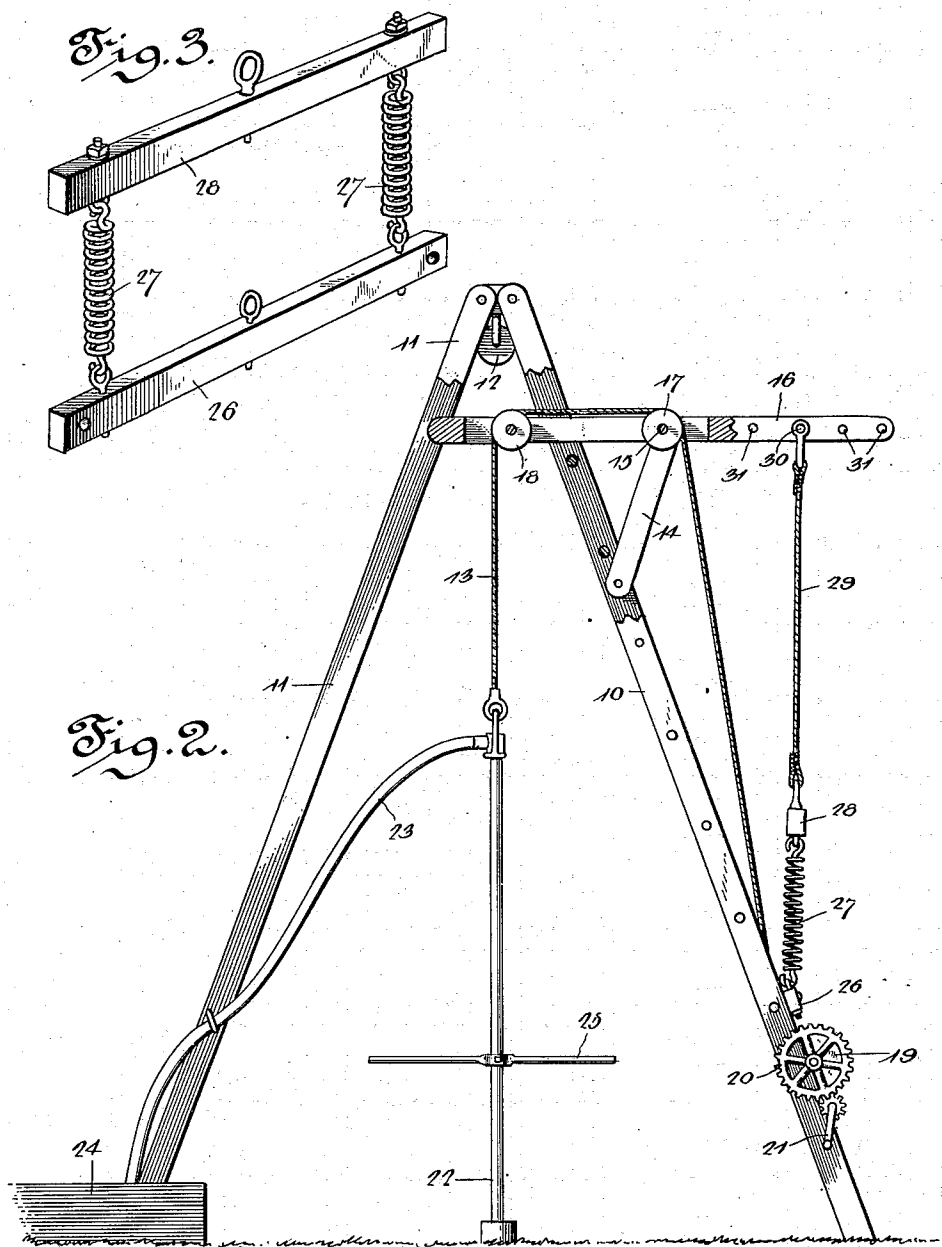
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Witnesses
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D. E. [Signature]

George D. Loomis, Inventor.
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UNITED STATES PATENT OFFICE.

GEORGE DUDLEY LOOMIS, OF TIFFIN, OHIO.

HAND WELL-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 652,004, dated June 19, 1900.

Application filed June 17, 1899. Serial No. 720,954. (No model.)

To all whom it may concern:

Be it known that I, GEORGE DUDLEY LOOMIS, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented a new and useful Hand Well-Drilling Machine, of which the following is a specification.

My invention relates to well-drilling machinery, and particularly to a machine adapted for actuation by hand-power; and the object in view is to provide a simple, comparatively-inexpensive, and efficient construction and arrangement of parts whereby drill-tools of different weights may be counterbalanced to facilitate the manual operation thereof, and in connection therewith to provide simple means for paying out the drill-rope.

The invention also has for its object to provide a construction in which the operator will move the drill downwardly by grasping the drill-rope or the shank of the drill, the return movement being secured by the counterbalancing means, so that the drill has a bouncing action.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a hand drilling-machine constructed in accordance with my invention. Fig. 2 is an elevation, partly in section, of the same. Fig. 3 is a detail view of the counterbalance.

Similar reference characters indicate corresponding parts in all the figures of the drawings.

The derrick which is illustrated in the drawings is of the ordinary construction, comprising a ladder 10 and suitable back braces 11, a rope-guide 12 being arranged at the top of the derrick to direct the drill-rope 13 when raising tools from the well. Projecting forward from the ladder is a bracket 14, upon which by means of a pin 15 is fulcrumed a walking-beam or rocking lever 16, provided concentric with the pivot 15 with a direction-pulley 17 and also provided upon one of its arms with a direction-pulley 18, which is located over the well and which is traversed by the drill-rope, which supports the tools. The other end of the drill-rope is reeled, as in the

ordinary practice, upon a drum 19, actuated by suitable gearing 20 and a crank 21, said drill-rope after leaving the drum first passing over the pulley 17 at the axis of the lever 16, and thence passing to the pulley 18, and finally to the tools. In the drawings I have shown drill-tools 22 of the tubular type, from the upper end of which extends a conductor 23 for the slush to be deposited in a suitable trough 24; but it will be understood that tools of the solid type may be used with the mechanism embodying my invention. An ordinary operating handle or lever 25 is secured by a clamp to the shank of the tool which is illustrated.

Secured to the derrick-ladder near its lower end and preferably above the plane of the drum 19 is a cross-bar 26, connected by counterbalancing-springs 27 with a movable or reciprocatory cross bar or head 28, and said cross bar or head 28 in turn is connected by a rod or cable 29 with that arm of the walking-beam or rocking lever which is remote from the guide-pulley 18, a pin 30 being used as the means of connection of the upper end of said rod with the lever and being adapted for engagement with either of a plurality of transverse openings 31, formed in said lever at different distances from its fulcrum. Obviously the tension of the counterbalancing-springs 27 is opposed to the depression of the pulley-carrying arm of the rocking lever; but by engaging the pin 30 with openings 31 at different distances from the fulcrum of the lever the apparatus may be adapted to counterbalance tools of different weights, said pin being engaged with an opening near the fulcrum of the lever when light tools are to be used and being engaged with more remote openings when heavier tools are to be operated.

In operation the tools are lowered to the desired point by the paying out of the drill-rope from the drum 19, after which the drill-tools are reciprocated by the periodic manual depression thereof through downward pressure applied to the handle or lever 25, and as the hole becomes deepened the drill-rope is still further unreeled, as in the ordinary practice. The counterbalancing-springs 27, of which two are shown in the drawings, but of which any desired number may be em-

ployed, serve to raise the drill-tools after each depression, and thus relieve the operators of the effort necessary to raise the tools.

It will also, of course, be understood that, when desired, a drive-weight or crushing-bar may be employed in connection with the drill-rope, the drilling-tools being removed and the weight or bar substituted therefor, these substituted parts being given the same motion as the drilling-tools; also, the winding-drum may be omitted and the rope otherwise held. Furthermore, instead of moving the pin backwardly and forwardly in the holes in the walking-beam the same result may be secured by varying the number and tension of the springs.

Having described my invention, what I claim is—

1. In a hand well-drilling apparatus, the combination with a ladder having braces connected therewith, of a bracket fixed to the ladder and extending rearwardly thereof, a walking-beam fulcrumed upon the bracket, said beam extending at its rear end beyond the bracket and with its forward end beyond the ladder, a winding-drum journaled upon the ladder below the fulcrum of the walking-beam, a guide-pulley mounted in the walking-beam between the ladder and the supports, a pulley mounted concentric with the fulcrum of the walking-beam, a rope passed over the pulleys and wound upon the drum, a cross-bar secured to the ladder, a second cross-bar connected with the first cross-bar through the medium of springs, and a connection between the second cross-bar and the rear end of the walking-beam, said connection being adjustable longitudinally of the walking-beam.

2. In a hand well-drilling apparatus, the combination with a derrick, drill-rope and drum, of a walking-beam or rocking lever ful-

crumed upon the derrick, and provided coaxially with its fulcrum, and upon one of its arms, respectively, with guide-pulleys for the drill-rope and over which pulley upon the arm, the drill-rope is passed in a downward direction to be grasped by the operator for reciprocation of the drill, fixed and movable cross bars or heads, of which the former is secured to the derrick, counterbalancing-springs connecting said cross bars or heads, said walking-beam or rocking lever having that arm which is remote from the arm-carried pulley provided with a plurality of transverse openings, and a connection between said movable cross bar or head and the walking-beam or lever, and provided with a pin for engagement with one of said openings of the lever, substantially as specified.

3. In a hand well-drilling apparatus, the combination with a derrick, of a walking-beam fulcrumed between its ends thereon and provided coaxially with its fulcrum and upon one of its ends respectively, with guide-pulleys for the drill-rope, a drill-rope passed upwardly over the guide-pulley at the fulcrum and then downwardly over the guide-pulley at the end of the beam to be grasped by the operator for reciprocating the drill, and counterbalancing-springs adjustably connected with the walking-beam at the opposite end from the end pulley and adapted to oppose the downward pull of the drill-rope and balance the weight of the drill and operative parts carried thereby to return them and hold them yieldably in a raised position.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEORGE DUDLEY LOOMIS.

Witnesses:

HARRY TAGGART,
E. T. NAYLOR.