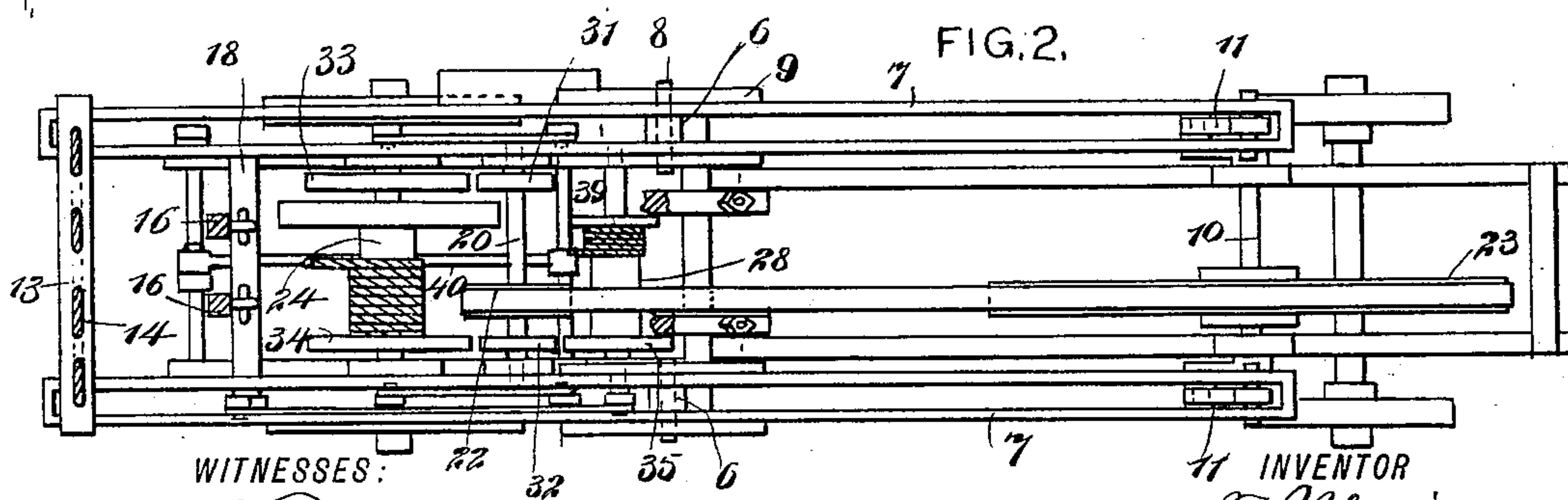
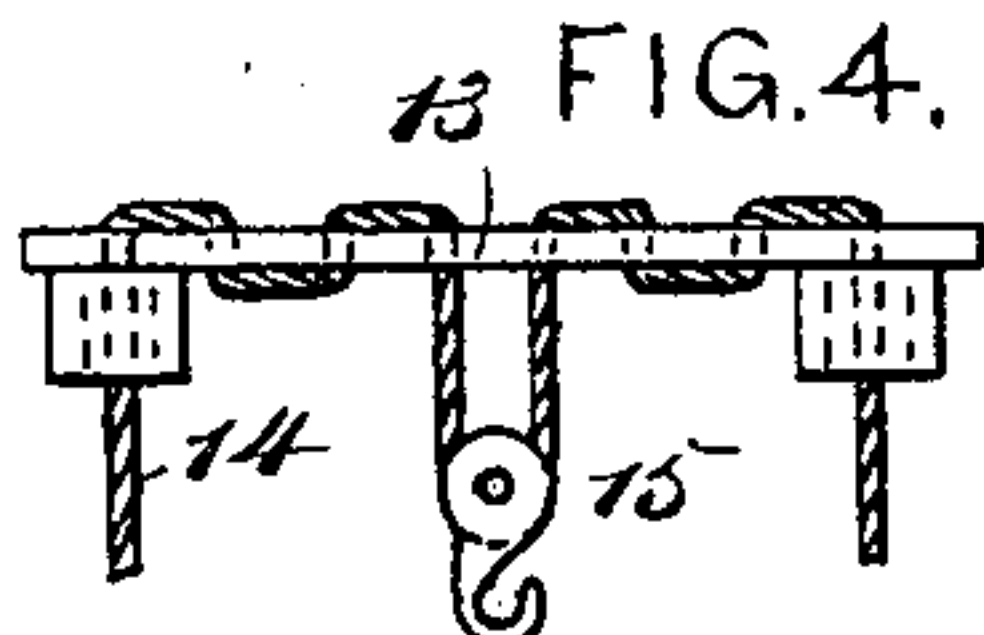


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WELL-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 592,678, dated October 26, 1897.

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To all whom it may concern:

Be it known that I, FRANCIS R. YEARIAN, of Rinard, in the county of Wayne and State of Illinois, have invented a new and Improved
5 Well-Drilling Machine, of which the following is a full, clear, and exact description.

This invention relates to machines for operating drills for boring wells—such, for instance, as oil-wells; and the object is to provide a machine of comparatively light construction that may be transported from place to place on suitable wheels and in which there are few parts, thereby providing for simplicity in construction, and in which a considerable power may be obtained from a comparatively small amount of motive agent.

I will describe a machine embodying my invention and then point out the novel features in the appended claims.

20 Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a top plan view thereof. Fig. 3 is a plan view of a certain part thereof, and Fig. 4 is a front view of a bar through which the tool or drill supporting rope extends.

30 The machine comprises a frame 1, mounted on wheels 2 3, and a frame 4, mounted on posts 5, extended upward from the frame 1. Posts 6 extend upward from the frames 1 and 4 at each side of the machine, and to each post 6 is fulcrumed a walking-beam 7. Each walking-beam 7 consists of two strips of wood secured together at their ends by suitable blocks, and each walking-beam is pivoted to its post 6 by means of a pin 8, which is movable.

On the outer sides of the strips forming the walking-beams bearing-blocks 9 are provided for the pin 8. Preferably these bearing-blocks will be made of wood, as wood is much
45 less liable to breakage than iron, and, further, should a wooden bearing be broken it may be easily replaced without sending the machine to a factory or to a practical mechanic. A crank-shaft 10 is mounted to rotate in bearings secured to the side members of the frame
50 4, and to the ends of this shaft 10 cranks 11 are attached, and from the wrist-pins of these

cranks links 12 extend to a pivotal connection with one end of the walking-beams. The opposite ends of the walking-beams 7 are connected by a head-block 13. This block is provided with a number of perforations, through which a rope 14 is passed. This rope 14 has a loop portion in the center engaging with a tackle or block 15, designed to engage the drill-
55 operating rod or rope in the usual manner. The ends of the rope 14 are passed upward through the middle openings in the head-block 13 and then back and forth through the other openings, as clearly illustrated in Fig. 4. 65 The ends are then passed down at the sides of the machine, so that an operator by releasing an end of the rope at either side of the machine may lower the block 15 as desired. At the other end of the frame 1 is attached a
70 derrick consisting of uprights 16. These uprights 16 have a hinge connection 17 with a cross-bar 18, mounted on posts 19, extended upward from the frame 1. By this construction it will be seen that the derrick may be
75 turned downward in a position substantially parallel with the frame when the device is moved from place to place.

Mounted to rotate in the frame is a main shaft 20, having a band-wheel 21, around
80 which passes a band operating from a motor—such, for instance, as a steam-engine—and which it is not necessary to show herein. On this driving-shaft 20 is also mounted a band-wheel 22, around which a band extends, 85 the said band also passing around a large wheel 23 on the crank-shaft 10.

Rearward of the driving-shaft 20 is a drum 24, having its shaft bearing in blocks 25, mounted to slide longitudinally of the machine-frame. From the drum 24 a rope 26 extends upward and over a pulley 27, arranged at the upper end of the derrick, the said rope being designed for attachment to a pipe or tool for withdrawing the same from
95 a well. Forward of the driving-shaft 20 is a drum 28, which also has its shaft-bearings in sliding blocks and from which extends a rope 29, passing over a pulley 30, supported at the upper end of the derrick and designed for
100 connection with a sand-bucket in the usual manner.

The drums 24 and 28 are designed to be rotated by a frictional engagement with the

driving-shaft. As here shown, the driving-shaft 20 is provided with friction-wheels 31 and 32, adapted to be engaged, respectively, with friction-wheels 33 and 34 on the shaft of the drum 24, and a friction-wheel 35 is mounted on the shaft of the drum 28 and is designed to be engaged with the friction-wheel 32 on the shaft 20.

I will now describe the means for moving the friction-wheels of the drums into engagement with the friction-wheels of the driving-shaft. The extended ends of the shaft for the drum 24 are projected into openings in levers 36, the lower ends of which are pivoted to the machine-frame. From the upper ends of the levers 36 links 37 extend to a pivotal connection with levers 38, pivoted to the machine-frame and connected at their lower ends by a transverse bar 39. From this transverse bar 39 a rod 40 extends to a connection with a hand-lever 41, pivoted to the end of the frame 1. Pivoted to the frame 4 are levers 42, which engage, respectively, with the extended ends of the shaft for the drum 28. The lower ends of these levers 42 are connected by a transverse bar and are operated by means of a rod 43, extended to a connection with a lever 44, pivoted to the frame 1. Obviously by this construction either one of the drums may be caused to rotate when desired by a frictional engagement with the wheels on the driving-shaft. The derrick may be braced in its upright position by brace-bars 45, pivotally connected at their upper ends with the uprights of the derrick and removably engaging with bolts on the machine-frame. It will be seen that during transportation the walking-beams, after removing the pins 8, may be lowered on the frame, and also by releasing the brace-bars 45 at their lower ends the derrick may be swung downward onto the frame.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A well-drilling machine, comprising a frame mounted on wheels, two walking-beams fulcrumed to uprights extending from said frame, a head-block connecting the ends of the walking-beams and having a series of openings for a rope, a crank-shaft having bearings in the frame, connecting-rods between the walking-beams and the cranks on said crank-shaft, a band-wheel on said crank-shaft, a driving-shaft having a band-wheel, a band connection between said band-wheel

on said driving-shaft and the band-wheel on the crank-shaft, a derrick mounted on the frame, a drum having sliding bearings, a friction-wheel on the shaft of said drum adapted for engagement with a friction-wheel on the driving-shaft, and pivoted levers engaging with the shaft of the drum for moving said drum to cause an engagement between the friction-wheels, substantially as specified.

2. A well-drilling machine, comprising a frame, walking-beams fulcrumed to uprights on said frame, a head-block connecting the ends of the walking-beams and having a series of openings for a rope, a crank-shaft, connecting-rods between the cranks of said crank-shaft and the walking-beams, a band-wheel on the crank-shaft, a driving-shaft having a band-wheel for operating the crank-shaft, drums mounted in sliding bearings at opposite sides of the driving-shaft, friction-gearing between the shafts of said drums and the driving-shaft, levers and rods operating in unison for moving the drums toward and from the driving-shaft, a derrick supported on the frame, and pulleys mounted in said derrick, over which ropes from the drums extend, substantially as specified.

3. A well-drilling machine, comprising a frame, walking-beams supported thereon, mechanism substantially as shown and described, for operating the walking-beams, a head-block supported on the said walking-beams and provided with a series of openings, a rope extended through said openings, and a tackle-block supported in the loop of said rope at the center of the head-block, substantially as specified.

4. A well-drilling machine, comprising a frame having uprights, walking-beams each consisting of two strips of material connected at their ends, removable pins supported by the uprights and on which the walking-beams are fulcrumed, driving mechanism, substantially such as described, for the walking-beams, a head-block connecting the ends of the walking-beams and provided with a series of openings, a rope rove through the openings, a block supported in the loop of the rope, and a derrick having its side members hinged to a transverse bar supported on posts extended upward from the frame, substantially as specified.

FRANCIS R. YEARIAN.

Witnesses:

L. J. KEITH,
CHAS. E. CROOKS.