

No 849,271.

PATENTED APR. 2, 1907.

J. W. SCHERER.
WELL DRILLING MACHINE.
APPLICATION FILED APR. 17, 1906.

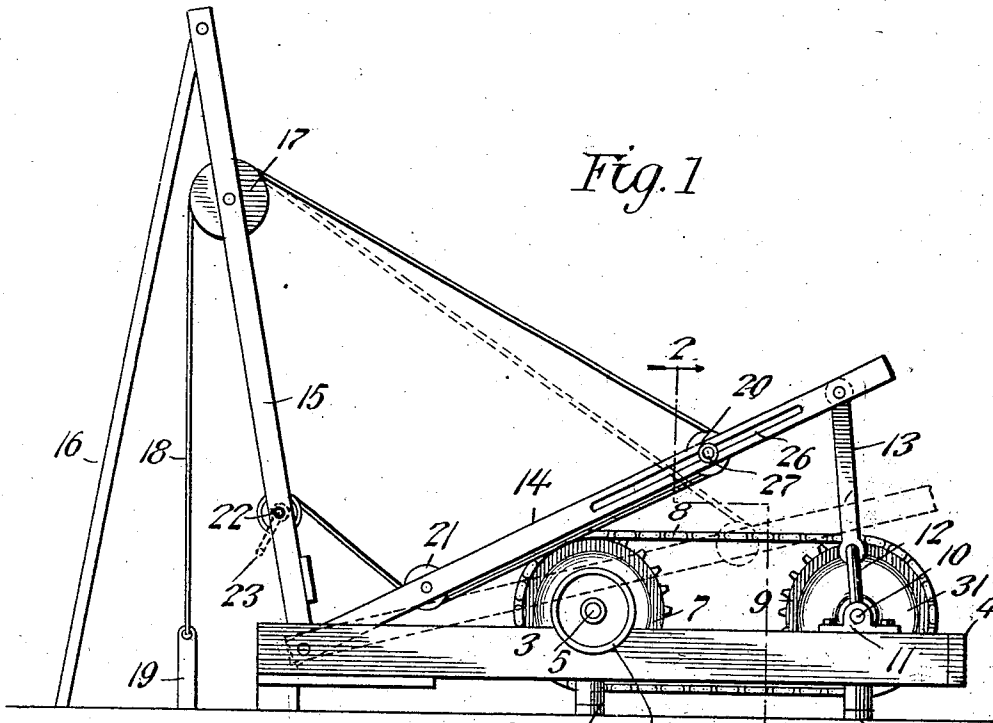


Fig. 2.

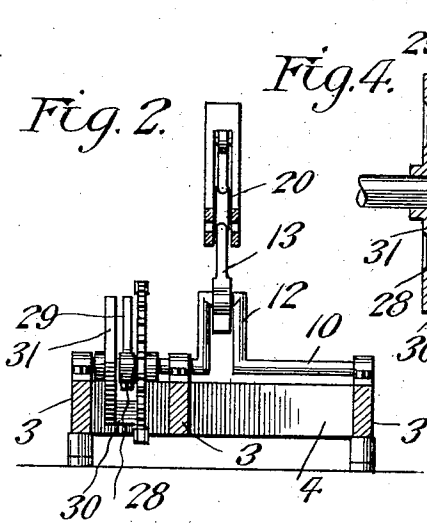


Fig. 4.

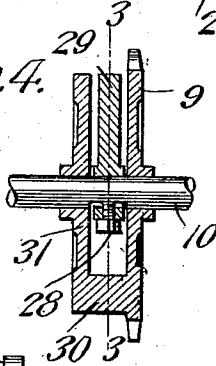


Fig. 3.

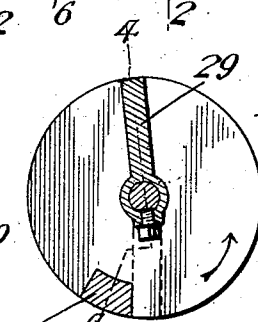
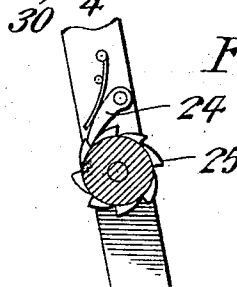


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN W. SCHERER, OF PETERSBURG, VIRGINIA, ASSIGNOR OF ONE-HALF
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WELL-DRILLING MACHINE.

No. 849,271.

Specification of Letters Patent.

Patented April 2, 1907.

Application filed April 17, 1906. Serial No. 312,191.

To all whom it may concern:

Be it known that I, JOHN W. SCHERER, a citizen of the United States, residing at Petersburg, in the county of Dinwiddie and State of Virginia, have invented new and useful Improvements in Well-Drilling Machines, of which the following is a specification.

This invention relates to well-drilling machines, and has for its objects to produce a comparatively simple inexpensive device of this character which may be readily set up for use, one in which the drill-rope will be positively operated for raising the drill, and one wherein the rope will at the completion of the upward movement of the drill be automatically released for permitting the drill to descend by gravity, thus augmenting the effectiveness of the drill in action.

Further objects of the invention are to provide means for readily varying the length of the active portion of the drill-rope and means for governing the altitude to which the drill will in action be raised.

With these and other objects in view the invention comprises the novel features of construction and combination of parts more fully hereinafter described.

In the accompanying drawings, Figure 1 is a side elevation of a well-drilling machine embodying the invention. Fig. 2 is a vertical transverse section taken on the line 2 2 of Fig. 1. Fig. 3 is a detail sectional view taken on the line 3 3 of Fig. 4. Fig. 4 is a section taken on the line 4 4 of Fig. 3. Fig. 5 is a detail view of a portion of the winding-drum, showing the locking-dog.

Referring to the drawings, 1 designates the base-frame, provided with feet 2, by which it is sustained in slightly-elevated condition above the ground-surface, said frame comprising longitudinal frame members or timbers 3 and cross pieces or timbers 4, there being journaled in suitable bearings on the frame a drive-shaft 5, equipped with a belt-pulley 6 and with a sprocket-wheel 7, connected by a chain-belt 8 with a sprocket-wheel 9, carried loosely upon an operating-shaft 10, journaled in bearings 11 on the frame and having a crank portion or bend 12, in which is pivoted one end of a pitman-link 13, having its other end pivoted to the rear end of a vertically-swinging beam or lever 14,

in turn pivoted at its forward end in the frame 1.

Pivoted at its lower end to the forward end of frame 1 is a derrick 15, adapted to be sustained in vertical position by a forward brace 16 and carrying at a point adjacent its upper end a grooved pulley 17, over which the rope or cable 18, connected with the drill 19, travels, there being journaled in the beam 14, which comprises a pair of relatively spaced side members or portions, a rear guide-pulley 20 and a forward guide-pulley 21, over which the drill-rope is led from a winding drum or reel 22, journaled for rotation in, and at a point adjacent the lower end of, the derrick 15. The drum, which is equipped with a crank-handle 23, is fixed against retrograde rotation by a spring-pressed pawl 24, adapted for engagement with a rack 25 on the drum, while the pulley 20 is adapted for adjustment longitudinally of the beam 14 through the medium of guide-slots 26, in which the axle 27 of the pulley is arranged for travel for a purpose which will more fully hereinafter appear.

Fixed upon the shaft 10 for rotation therewith by means of a set-screw 28 is an engaging member or arm 29, adapted for engagement by a laterally-projecting stop portion or abutment 30 in the form of a segmental web formed integral with the sprocket-wheel 9 and with an annular disk 31, arranged in spaced relation to the wheel and for movement therewith on the shaft 10, the arm 29 being disposed between the wheel and disk, whereby its lateral displacement on the shaft is prevented.

In practice the shaft 5 is driven from any suitable source of power for transmitting motion through the medium of sprockets 7 and 9 and chain 8 to shaft 10, which during rotation acts, through the crank portion 12, for reciprocating the pitman 13 and swinging the lever 14 on its fulcrum in a vertical plane.

As shaft 10 rotates the stop portion or web 30 will be engaged by arm 29 for effecting a rotation of the shaft with the sprocket 9 during the downward movement of pitman 13 and until the arm has been carried past the center at the lowermost point of travel of the web 30, as illustrated by dotted lines in Fig. 3, whereupon the shaft will be released

from rotation with the sprocket and the drill 19 permitted to drop by gravity, thereby swinging the lever-beam 14 upward to the position illustrated in Fig. 1, it being understood, of course, that during downward movement of the drill the shaft will be rotated and the crank-arm 12 and pitman 13 carried to position for again swinging the beam downward upon engagement of the arm 29 with the web during further rotation of the shaft. On downward movement of the rear end of beam 14 the drill will be lifted through the medium of rope 18, which is actuated by the beam and carried to its highest elevation prior to the arm 29 passing center, as just explained.

It is to be observed that the desired quantity of cable for use may be paid out from the drum 22 and that by moving the guide-pulley 20 longitudinally of the beam the active stroke of the drill may be varied at will, and this irrespective of the length of the active portion of the cable. Furthermore, it is to be noted that owing to the beam 14 being drawn downward for positively raising the drill and the latter automatically released for free descent by gravity the effectiveness of the drill in action is insured.

Having thus described my invention, what I claim is—

In a well-drilling machine, a frame, a beam fulcrumed therein for vertical swinging movement a drill-operating element connected with the beam and for movement by the latter to operate the drill, a crank-shaft journaled in the frame and having a crank portion, a pitman journaled on said crank portion and connected with the beam a belt-wheel mounted idly on the shaft and having a laterally-projecting portion, a drive-shaft carrying a belt-pulley, a belt connecting said pulley with the first-named pulley, and an arm fixed on the crank-shaft and adapted for engagement by the projecting portion of the adjacent pulley to positively rotate the shaft and swing the beam downward, said beam being adapted to swing upward under the weight of the drill upon movement of the arm past the dead-center of the pulley.

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

JOHN W. SCHERER.

Witnesses:

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