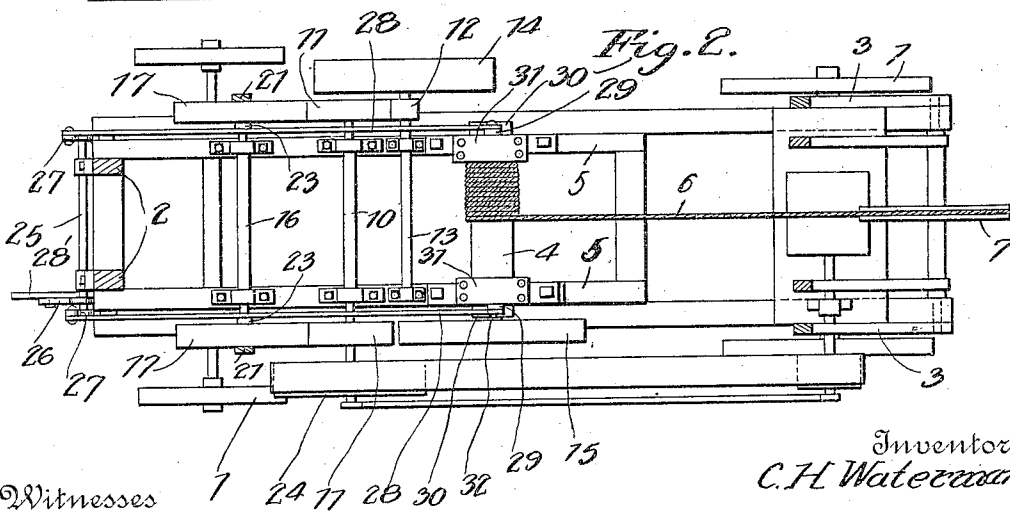
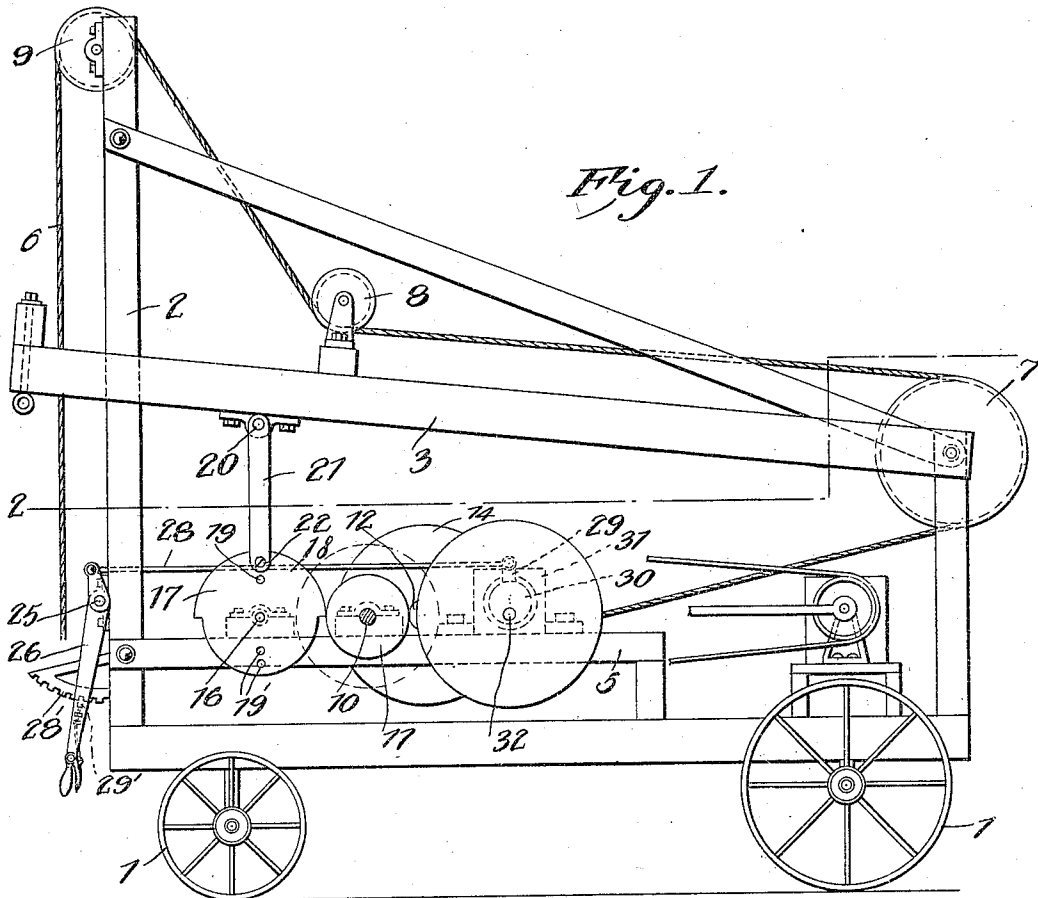


C. H. WATERMAN.
WELL DRILLING MACHINE.
APPLICATION FILED MAY 13, 1909.

960,459.

Patented June 7, 1910.

2 SHEETS—SHEET 1.



Witnesses

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C. H. Giesbauer

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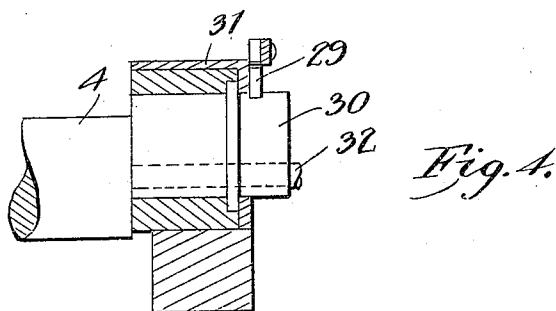
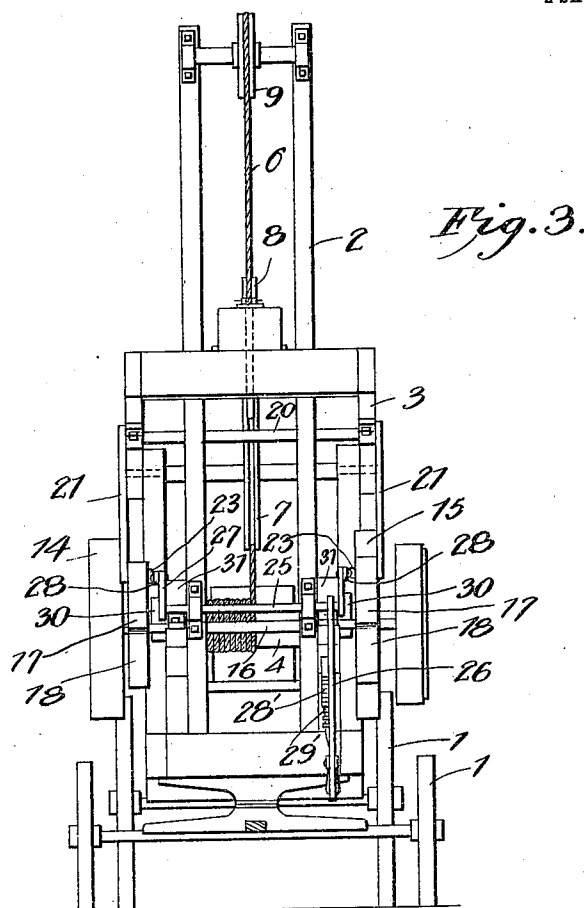
Attorneys

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2 SHEETS—SHEET 2.

960,459.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLIE HENRY WATERMAN, OF NEWPORT, WASHINGTON, ASSIGNOR OF ONE-THIRD
TO DENNIS E. WATERMAN AND ONE-THIRD TO N. O. HOYER, OF NEWPORT, WASH-
INGTON.

WELL-DRILLING MACHINE.

960,459.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed May 13, 1909. Serial No. 495,751.

To all whom it may concern:

Be it known that I, CHARLIE HENRY WATERMAN, a citizen of the United States, residing at Newport, in the county of Stevens and State of Washington, have invented certain new and useful Improvements in Well-Drilling Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to new and useful improvements in well drilling machines, the improvements being especially directed to an improved form of gearing for operating the drill either over the mast or when connected with the walking beam.

With these and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts, as will be more fully described and particularly pointed out in the appended claim.

In the accompanying drawings, Figure 1 is a side elevation of a machine embodying my improvements; Fig. 2 is a horizontal section taken on line 2—2 of Fig. 1. Fig. 3 is a front elevation of Fig. 1; and Fig. 4 is a fragmental sectional view on an enlarged scale.

In the embodiment illustrated the numeral 1 indicates a suitable truck upon which the drill operating mechanism is mounted, 2 the mast, 3 the walking beam, 4 the reel which is mounted upon the side pieces 5 of a supporting structure mounted upon the bed of the truck, 6 the drilling rope which winds around said reel, passes over a pulley 7 journaled at the rear end of the machine above the reel, passes next under a pulley 8 suitably mounted upon the walking beam and finally passes over a third pulley 9 positioned at the upper end of the mast. A transverse shaft 10 is mounted upon the side pieces 5 in front of the reel 4 and is provided at opposite ends with corresponding friction wheels 11, one of which runs in contact with a smaller friction wheel 12 arranged at the adjacent end of a transverse shaft 13 mounted upon the side pieces 5 between the reel and shaft 10, said end of the shaft 13 also having a fly wheel 14, the purpose of which will be obvious. The friction wheel 11 at the opposite end of the shaft 10 is spaced a slight

distance in front of a drive wheel 15 arranged at one end of the reel shaft. A transverse shaft 16 is also mounted upon the side pieces 5 in front of the shaft 10 and is provided at opposite ends with operating wheels 17, each provided a distance of approximately half its circumference with a cam 18 adapted to run in contact with the friction wheels 11. Each of said operating wheels is provided at each side of its center and in a line taken transversely through its cam with a pair of screw-threaded openings 19 and 19'.

A transverse rock shaft 20 is mounted in suitable bearings under the free end of the walking beam 3 and is connected by a pair of links 21, with either one of either pair of apertures 19 and 19' of the operating wheels 17 by a screw 22. If desired a jam nut 23 may be screwed upon the fastening screws 22 against the inner faces of the operating wheel 17 to hold the former securely in position. To drill over the mast the links 21 are connected with either of the pairs of apertures 19 near the cam surfaces of the cam wheels, as clearly shown in Fig. 1 of the drawings. With the links connected with the cam wheels in this manner when the friction wheels 11 are caused to rotate in the direction indicated by the arrow by applying power to a drive wheel 24 arranged at one end of the shaft 10, the walking beam 3 is lowered and operates to raise the drill. As soon, however, as the cam surfaces of the cam wheels pass the friction wheels the former make a half revolution and return to the position shown in Fig. 1 without contacting with the friction wheels, during which time the drill descends. It will thus be seen that by employing a construction which I show, as soon as the drill has been elevated to the proper point it is permitted to fall instantly without being retarded in its descent by gearing of any kind and deliver its blow with greater force.

When it is desired to operate the machine with the drill connected direct with the walking beam the links 21 are connected with the pairs of apertures 19' of the cam wheels 17, it being evident that in order to elevate the drill in this case it is necessary to raise the free end of the walking beam rather than lower it, as when drilling over the mast.

I will now describe an arrangement under

the control of the operator, whereby the wheel 15 may be moved forwardly in contact with the adjacent friction wheel 11 when it is desired to rotate the reel 4, in order to
 5 wind up the rope. In carrying these objects into effect, a rock shaft 25 is suitably mounted at the front of the machine, said shaft being equipped with a depending operating lever 26 having a pair of upstanding arms
 10 27, the latter of which is connected by longitudinally extending links 28 to the upstanding arms 29 of circular bearings 30 mounted in suitable boxings 31 bolted or otherwise attached to the side pieces 5, as
 15 shown in the drawings. The bearings 30 are provided for the ends of the reel shaft 32 which passes through the bearings at points eccentric to the centers thereof. From the construction disclosed it will thus be seen
 20 that by pushing upon the lever 26 the wheel 15 will be moved forwardly in contact with the adjacent friction wheels 11, said lever being held in the desired position by a locking pawl and rack 28 and 29, respectively,
 25 the latter being arranged at the front end of the machine.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the
 30 invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention as defined in the appended
 35 claim.

Having thus described and ascertained the nature of my invention, what I claim as new and desire to secure by Letters-Patent, 40 is:—

In a machine of the class described, a supporting structure, a pair of friction wheels mounted thereon, circular operating wheels having semicircular cam surfaces to engage
 45 the friction wheels during a portion of their revolution, a walking beam pivotally mounted above the operating wheels, links between the walking beam and operating wheels, a
 50 reel mounted in rear of the friction wheels, and a drill rope operated by the walking beam, and means for adjustably connecting the lower ends of the links with the cam sides or the opposite sides of the operating
 55 wheels.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLIE HENRY WATERMAN.

Witnesses:

FRED STEVENS,
 FRED C. KRAUSE.