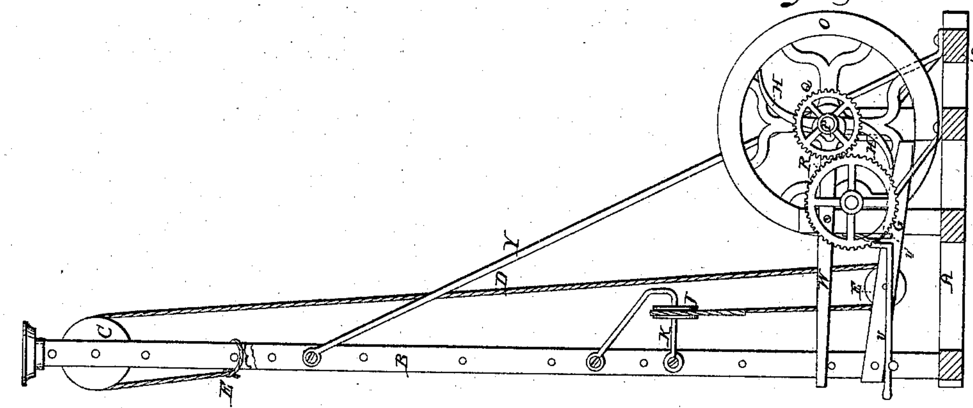
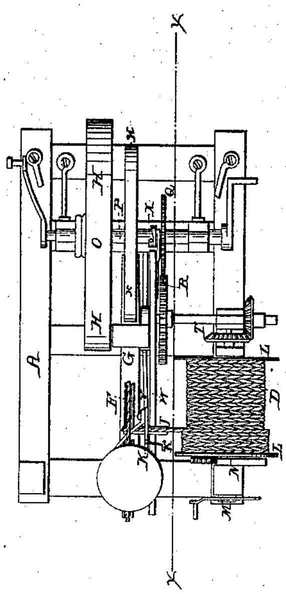
W. Hyde,

Boring Artesian Wells.

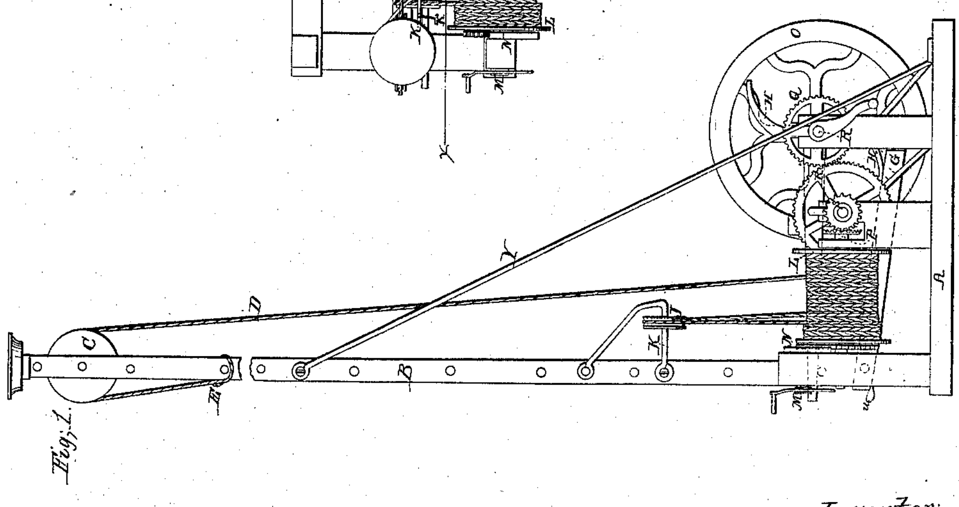
No. 47,729. Patented May 16, 1865.



Fig; 2.



Fig; 3.



Fig; 1.

Witnesses;
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UNITED STATES PATENT OFFICE.

WALTER HYDE, OF NEW YORK, N. Y.

IMPROVEMENT IN BORING WELLS.

Specification forming part of Letters Patent No. **47,729**, dated May 16, 1865.

To all whom it may concern:

Be it known that I, WALTER HYDE, of the city, county, and State of New York, have made new and useful Improvements in Well-Boring Machines; and I do hereby declare the following to be a clear and exact description of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a side elevation of the machine. Fig. 2 is a section on the line *x x*, Fig. 3. Fig. 3 is a plan or top view.

Similar letters refer to like parts in the different figures.

The objects of this improvement are, first, to operate the drill through the medium of a single continuous rope; second, to provide facilities for arresting the motion of the drill without stopping the machinery; third, to provide facilities for changing the action of the motor from that of operating the drill to that of withdrawing it.

On a sill, A, is erected a vertical frame or shears, B, near the summit of which is a pulley, C, over which the rope D passes. This is connected at its upper end, E, with the stock of the drill-shaft, and on the other side of the shears or derrick, passing downwardly, runs upon a sheave, F, which is pivoted in a lever, G, which vibrates vertically, its downward motion being caused by the cams H on the shaft P, and the return motion being given to the weight of the drill-stock as it makes its effective stroke. The rope D, on leaving the sheave in the lever, ascends and passes over sheave J, which rotates upon an axis, K, which is bracketed to the shears, and from the sheave J descending it is wound upon the drum L, which holds all the reserve of rope beyond what is necessary to reach from the drum to the head of the drill-stock.

A winch, M, is fitted upon the shaft of the drum L for winding up the rope by hand, and a pawl, N, retains the drum in position with the required tautness upon the rope D.

O is the fly-wheel, upon whose shaft P the cams H are placed, and Q is a spur-wheel, which communicates by gearing R S T with the shaft of the rope-drum L, so as to wind up the rope by motion applied to the shaft P.

When it is desired to stop the motion of the drill, it is done by means of a lever, U, which operates a detent, V, which latter is thrown above the lever G, so as to hold it at the downward point of its stroke out of the effective range of the cams H.

W is a lever operating a clutch, X, on the shaft P, so as to throw the winding-up gear Q R S T into action to draw the rope D and withdraw the drill or sand-bucket from the well or shaft.

Y are stays to sustain the shears or derrick B in a vertical position.

The operation of the machine is as follows: The drill-stock with drill attached being suspended from the end of the rope, the shaft P is rotated, which brings the cams H in contact with the lever, which, drawing upon the rope, elevates the drill and again releases it, so as to cause the required lite intermittent motion. As the drill works its way down, a portion of rope is let off from the drum L by raising the pawl and allowing the drum to rotate a notch or two of the ratchet-wheel on its end. The requisite distance having been drilled, the tool is withdrawn for the operation of removing the detritus by the sand-pump, and this withdrawal is performed by moving the lever U, which throws the detent V above the lever and holds the drill suspended and at rest. The lever W then throws the clutch X in gear, and rotates the drum L through the interposition of the gearing Q R S T, and the rope and drill are withdrawn from the well.

The means of operating the machine for lowering the sand pump or the drill to its working depth are the winch M, the pawl being thrown out of gear.

The windlass-drum on the side of the machine is capable of containing a thousand feet of rope, and is continuous, being always in place without making connections of separate lengths.

The motor is run continuously, and the winding or drilling mechanism is applied at pleasure or both thrown out of gear.

It is sometimes necessary, on account of fissures in the rock or the accumulation of débris, to withdraw the drill instantaneously, and this is done by moving the hand-lever W, which throws the winding-up gear into instant action.

The prime motor which revolves the shaft P it is not necessary to describe. It may be steam engine or other power.

The arrangement for driving pipe is fixed to the main post, and works in substantially the same manner as those in ordinary use, except that the device which grasps the weight is secured to the rope by a screw in the same manner that the drill-rods are secured to the same.

The length of the stroke of the drill is regulated by the tension of the cord, and all the motions are effected without handling the rope, which is often cold and nasty.

The drill-stock is suspended, and when the drill comes to a crevice, perhaps oblique to its course, it has a natural tendency to follow it. The drill is then worked gently, so as at its lowest point merely to touch the rock, until it has established a footing.

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

1. The combination of the reserve rope-drum L, the sheave J, the vibrating lever G and its pulley F, the upper pulley, C, the rope D, drill-stock, and tripping-cams, so that all the motions of the drill-stock are governed through the medium of a continuous rope.

2. Attaching the end of the drill-stock to a continuous rope, which is paid out as is required by the settling of the drill in the well, in connection with devices by which the rope is swayed or retracted to give the reciprocatory motion to the drill-stock, and with devices by which the drill-stock is withdrawn without detaching the rope or stopping the motion of the prime motor.

3. The lever U, in combination with the plate V or other detent for arresting the motion of the vibrating lever.

4 In connection with the subject-matter of the second claim, the lever W, as a means of changing the action of the motor-frame, a drill-operating mechanism to a drill with drawing mechanism.

The above specification of my improved well-boring apparatus signed this 24th day of February, 1865.

WALTER HYDE.

Witnesses:
ALEXR. A. C. KLAUCKE,
EDWARD H. KNIGHT.