

(No Model.)

R. M. DOWNIE.
Well-Drilling Machine.

No. 228,737.

Patented June 15, 1880.

Fig. 1.

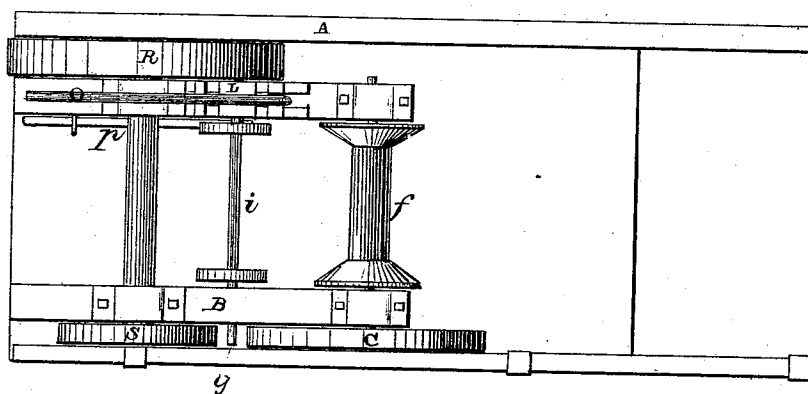


Fig. 2.

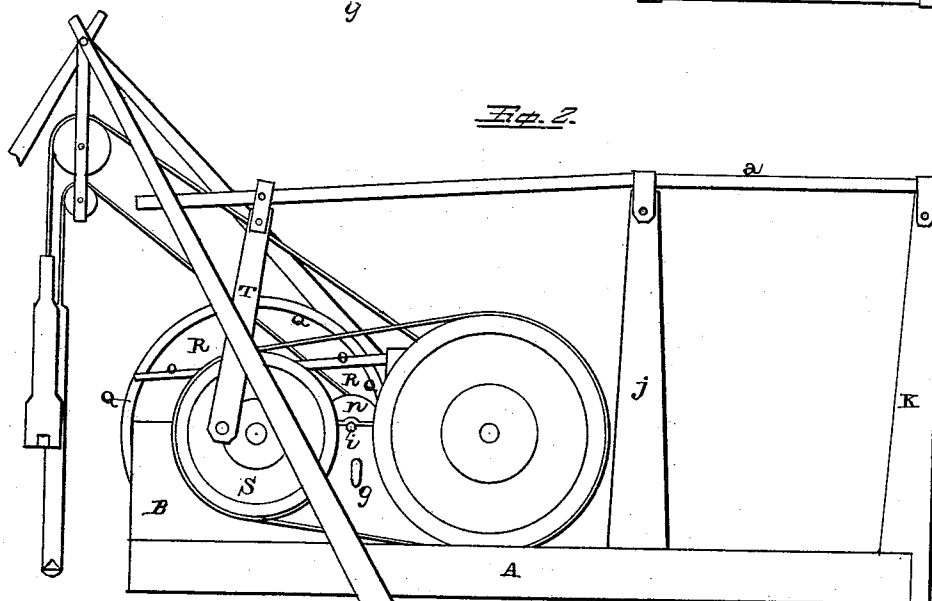
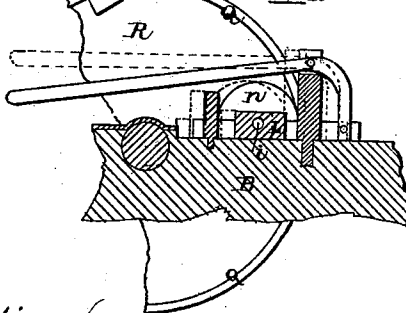


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

ROBERT M. DOWNIE, OF BUTLER COUNTY, PENNSYLVANIA.

WELL-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 228,737, dated June 15, 1880.

Application filed May 13, 1880. (No model.)

To all whom it may concern:

Be it known that I, ROBERT M. DOWNIE, of the county of Butler and State of Pennsylvania, have invented certain new and useful
5 Improvements in Well-Drilling Machines; and I do hereby 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 pertains to make and use it,
10 reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in well-drilling machines; and it consists in the use of a spring-pole in the place of the usual
15 heavy walking-beam, and in the operating parts combined therewith, whereby a simple, light, and cheap machine is produced, which can be readily transported from place to place.

The machines for well-drilling heretofore
20 in use are mostly of an unwieldy construction, occupying a large space and working but slowly, owing to the walking-beam by which the motion is communicated to the drill-tools.

In this improvement I discard the walking-
25 ing-beam and use the spring-pole, the velocity and extent of the action of which may be increased or diminished as desired. By dispensing with the walking-beam a great weight is removed that greatly encumbers well-drilling machines and prevents them from being
30 made portable.

In my improvement all parts are made light, and one man controls the action of the machine without leaving his place.

35 Figure 1 is a plan view of my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a detail view, partly in section.

A represents a suitable rectangular frame, having secured to it at one end the post K.
40 Fastened upon the top of this post is a spring-operating rod, *a*. At any suitable distance from the post K is a second post, *j*, upon the top of which the spring pole or rod rests.

In the front end of the frame A are placed
45 suitable bearings B, in the top edges of which is journaled the reel *f*, the shaft of which reel has a large friction-wheel, C, upon one end. This friction-wheel has bearing against it a suitable brake, *g*, which is operated by the
50 hand-lever *p*. By bearing against this wheel C by means of the brake *g* the speed at which

the rope connected to the tools used in the digging of the well shall be drawn from or wound upon the reel can be regulated at will.

In front of the reel *f* is another smaller
55 reel, *i*, which carries the sand-pump rope. One end of this smaller reel is journaled in the sliding box L, which is operated by means of the lever O. On the end of this reel is a small friction-wheel, *n*, which can be moved
60 in or out of contact with the flange Q, formed on the inner rim of the large driving-wheel R. When this small wheel is in contact with the interior of the rim or flange of this large driving-wheel the reel is operated for the
65 purpose of drawing up the sand-pump; but when the wheel is moved out of contact with the rim or flange the weight of the sand-pump will cause the rope to unwind.

Upon the opposite end of the shaft to which
70 the large driving-wheel is secured is a crank or wheel, S, provided with a wrist-pin, which is connected to the spring-pole *a* by a suitable rod, T. To the upper end of this spring-pole is connected the rope for the operating
75 drill-rod. As the large wheel is made to revolve by means of the driving-engine, which is placed inside of the frame A, the motion is communicated to this wheel, and from the wheel S the motion is communicated to the
80 spring-rod in such a way as to operate the drill-rod up and down.

By the use of a spring-rod, instead of the usual heavy walking-beam, not only is the weight of the walking-beam dispensed with,
85 and the machine made to run more rapidly, but the elastic force of the pole is made to help to raise the drill-rod on its upstroke.

The ropes from the two reels pass over suitable pulleys, which are supported in the frame-
90 work over the top of the wheel, as shown in Fig. 2.

The operator stands in front of the machine, within reach of the two levers.

The machine is set in motion by means of
95 the belt which connects it with the steam-engine.

Having thus described my invention, I claim—

1. In a well-drilling machine, the combination of the reel *f*, brake *g*, and lever *p* with the wheels C, R, and S, substantially as shown.

2. In a well-drilling machine, the combination of the reel *f*, wheel C, brake *g*, and lever *p* with the reel *i*, having a wheel, *n*, upon one end, to engage with the flange on the wheel
5 R, and a movable box, L, substantially as described.

In testimony that I claim the foregoing I

have hereunto set my hand this 29th day of April, 1880.

ROBERT M. DOWNIE.

Witnesses:

T. F. LEHMANN,
CHAS. H. ISHAM.