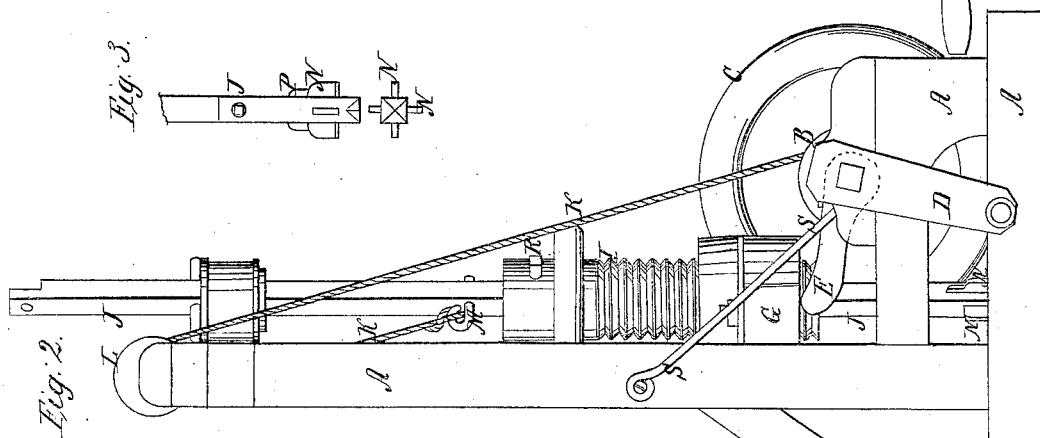
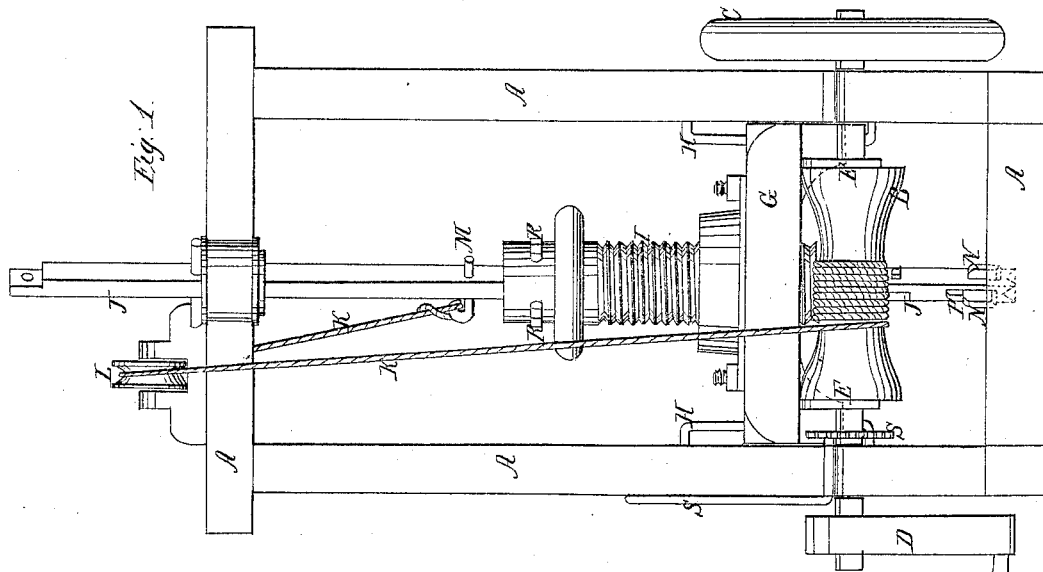


J. Hafner,

Boring Artesian Wells.

N^o 49,687.

Patented Aug. 22, 1865.



Witnesses;
Gilbert B. Soules,
Daniel Prigarko

Inventor;
Joseph K. Hafner
By his Attorney
J. Franklin Fay

UNITED STATES PATENT OFFICE.

JOSEPH HAFNER, OF STERLING, ILLINOIS, ASSIGNOR TO HIMSELF AND
F. M. FRIENDENBACH, OF SAME PLACE.

IMPROVED WELL-DRILL.

Specification forming part of Letters Patent No. **49,587**, dated August 22, 1865

To all whom it may concern:

Be it known that I, JOSEPH HAFNER, of Sterling, in the county of Whiteside and State of Illinois, have invented new and useful Improvements in Machines for Drilling Wells; and I do hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the arrangement and combination of the sliding bed G, having a center regulating-screw, a windlass, and a square drill with movable cutters for the purpose of drilling oil-wells.

Figure 1 represents a front elevation, Fig. 2 a side elevation, and Fig. 3 a sectional side and bottom view, of the drill.

A represents the upright frame; B, a windlass with fly-wheel C and crank D, regulated by a ratchet and dog, S.

E E are levers attached to the axis of the windlass B to raise and regulate the height of the sliding bed or cross-beam G at every revolution of the windlass B. The bed G works up and down on guides H located on the side of the frame. An upright center screw, I, passes through the bed G to turn the drill J when required. The drill-rod J, being square and passing through the center of the screw I,

is worked to either side, so as to vary the cutting operation of the drill J, and to raise or lower the drill by turning the screw I.

A rope, K, from the windlass passes over a pulley, L, at the top of the frame, and has a pin, M, attached, which is inserted in apertures in the drill-rod J to raise the drill when required.

The drill J has four cross-cutting edges below, and has movable cutters N, that project on both sides and are held fast by wedges P above, and can be removed at any time to be sharpened or renewed.

The drill-rod J is held firmly in the center of the screw I by thumb-screws R, and the screw I and bed G serve to act also as a heavy weight to the operation of the drill and assist its progress in cutting and drilling.

What I claim as my invention, and desire to secure by Letters Patent, is—

The arrangement and combination of the sliding bed G, with its center operating-screw, I, the windlass B, and square drill J, with its movable cutters N, as herein described, and for the purposes set forth.

JOSEPH HAFNER.

Witnesses:

J. FRANKLIN REIGART,
EDM. F. BROWN.