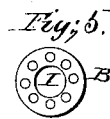
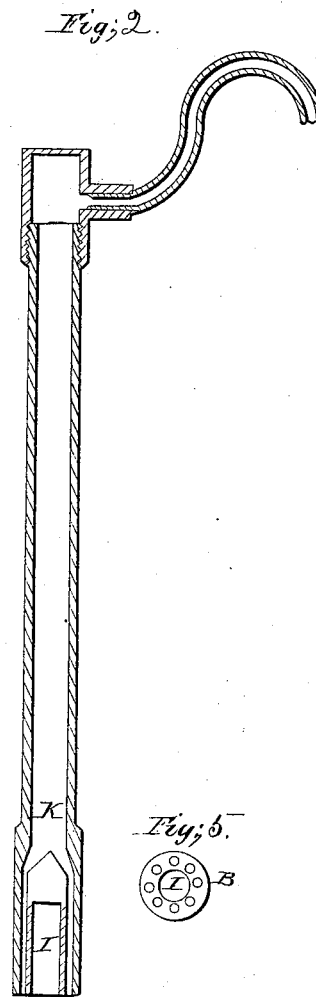
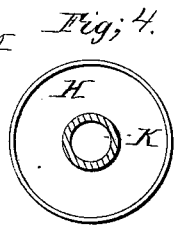
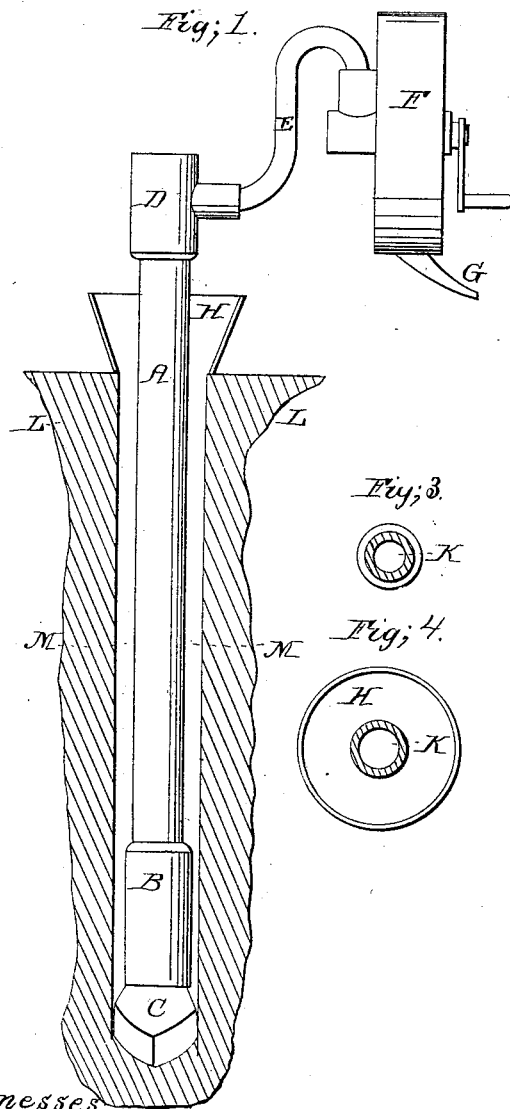


O. G. Warren,
Well Tubing,
No. 51,984, *Patented Jan. 9, 1866.*



Witnesses,
J. D. Sturtevant
Daniel Fitzgerald

Inventor,
Owen G. Warren

UNITED STATES PATENT OFFICE.

OWEN G. WARREN, OF NEW YORK, N. Y.

IMPROVEMENT IN SUCTION-DRILLS.

Specification forming part of Letters Patent No. 51,984, dated January 9, 1866; antedated December 26, 1865.

To all whom it may concern:

Be it known that I, OWEN G. WARREN, of the city, county, and State of New York, have invented a new and useful Improvement in the Suction-Drill; and I hereby declare that the following is a full and exact description thereof.

To enable others skilled in the business to make and use my invention, I proceed to describe its construction and operation, reference being had to the drawings hereunto annexed, and making part of this specification.

Figure 1 is a section of earth, showing a well in which is the suction-drill in elevation, with a rotary pump attached; Fig. 2, vertical section of the pipe, &c., both designs exaggerated as to the diameter of the pipe; Fig. 4, the curb representing any inclosure at top of the well to hold water; Fig. 3, section of the pipe; Fig. 5, lower end of the pipe-stock or socket for drill and the inlet holes.

The same letters refer to the same things in all the designs.

A is the pipe or hollow drill-shaft; B, the drill-stock at the lower end; C, the drill; D, the cap; E, the exhausting-pipe; F, a rotary pump; G, outlet-pipe; H, the curb at the top of the well; I, socket for the drill; K, inner part of pipe; L, section of the earth or rock bored into; M, the well or hole bored.

The purpose of this invention is, while drilling in rock for petroleum, &c., to abstract the chips or comminuted stone or earth (the débris of boring or stamping) commingled with water by simply pumping it out. Any pump will do for the purpose. I propose to use a simple rotary pump that a man may turn by a crank

in the absence of power machinery. I use a pipe for the drill shaft or rod, at the foot of which I insert my drill or drill-stock. A valve may be used, but it is not essential, upon the plan I adopt. At or near the top I connect a flexible pipe leading to a pump, which should work all the time the boring is going on. I fill the well outside the pipe with water, and, if convenient, build a curb round the top a few feet in height, through which the exhausting or suction pipe passes, or may pass, so as to let the water off at a lower point than the surface of water in the curb. The water will flow out through the suction-pipe in such case without pumping; but the pumping should go on so as to give speed and forcible action to the water within the pipe.

If a valve be placed in the pipe, the motion of the drill will pump the water out, receiving it each time the pipe is thrust down; but a valve will do more harm than good if the well be filled with water.

When power is used, so that it is not important to have the water flow out easily, the suction may be made from a point above the curb H, as shown, Fig. 1.

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

Exhausting the comminuted stone and dirt from a well through a pipe in the process of boring, in the manner substantially as above described.

OWEN G. WARREN.

Witnesses:

J. D. STURTEVANT,
DANIEL FITZGERALD.