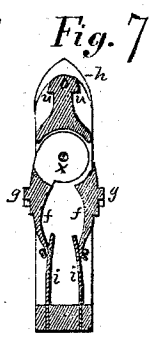
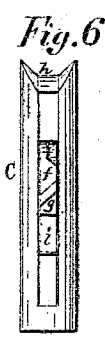
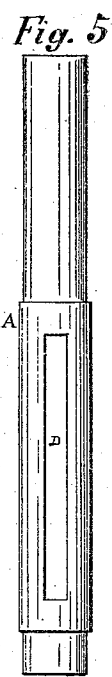
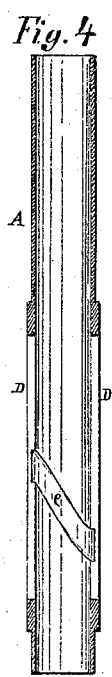
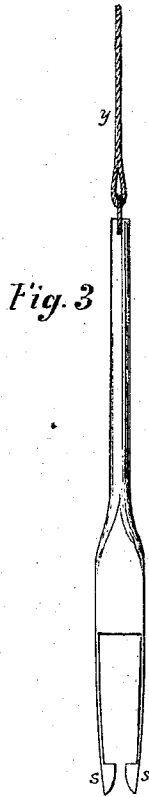
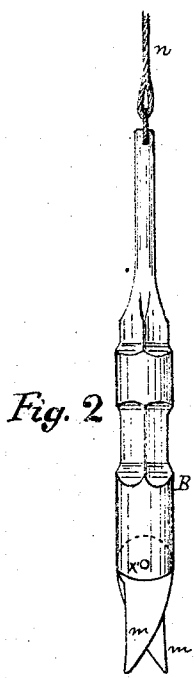
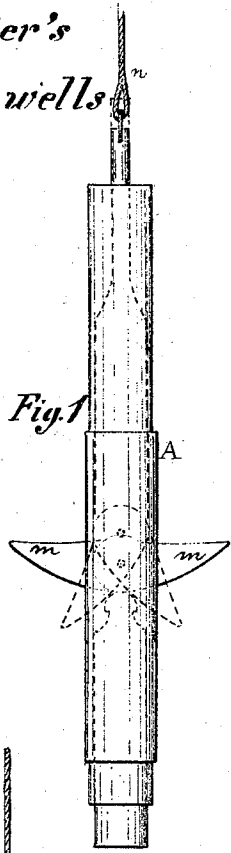


William Forker's
Drill for Oil-wells

117615

PATENTED AUG 1 1871



Witnesses
Wm. H. Thomas
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Inventor
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By L. L. Johnston his attorney

UNITED STATES PATENT OFFICE.

WILLIAM FORKER, OF ROCKLAND, PENNSYLVANIA.

IMPROVEMENT IN REAMERS FOR OIL-WELLS.

Specification forming part of Letters Patent No. 117,615, dated August 1, 1871.

To all whom it may concern:

Be it known that I, WILLIAM FORKER, of Rockland, in the county of Venango and State of Pennsylvania, have invented a new and useful Improvement in Drill for Oil-Wells; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

The nature of my invention consists in the combination and arrangement of the several parts hereinafter described for forming a drilling device for enlarging the bore of oil-wells.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawing which forms part of my specification, Figure 1 is a side elevation of my improvement in drilling device for enlarging the bore of oil-wells. Fig. 2 is a side view of the drill. Fig. 3 represents a grappling-tool for removing the guide from the casing. Fig. 4 is a vertical section of casing for the drill. Fig. 5 is a side view of the casing for the drill. Fig. 6 is a side view of the guide for the drill. Fig. 7 is a vertical section of the guide for the drill.

In the accompanying drawing, A represents the casing for the drill. In the sides of the casing A are openings D, which serve as guides for the pivoted drilling-points *m* of the drill B. On two sides of the interior of the casing are spiral grooves *e*, which are used for guiding the guide C into the proper position for guiding the drilling-points *m* of the drill B. The drilling-points *m* are pivoted at *x'*, as indicated in Fig. 2. The guide C is provided with two pivoted arms, *f*, furnished with spiral projections *g*, which, in form, correspond to the spiral grooves *e* in the casing A. The arms *f* of the guide C are pivoted at *x*, and are held out by springs *i*, so that the spiral projections will project beyond the outer surface of the body of the guide C. In the upper end of the guide C is a cavity, the sides of which are so beveled that the form of this cavity *h* will guide the drilling-points *m* out through the openings D, as indicated in Fig. 1.

As the construction of the several parts of my improvement in drilling device will be readily understood from the foregoing description and by reference to the accompanying drawing, I will therefore proceed to describe the manner of ar-

ranging the several parts together and the operation of the drill. The pump-tubing is removed from the well, and casing used while drilling a well in the ordinary manner is placed in the well. The case A is then attached to the lower end of the tubing used for the pumping and is lowered down into the well, so that the case A will be at the point where it is desired to enlarge the bore of the well. The outer casing is raised so that its lower end will be a little above the point in the well which is to be enlarged. The guide C is then placed in the tubing and allowed to drop down into the case A. The projections *g* of the flexible or yielding arms *f* will enter the spiral grooves *e* in the case A, and so turn the guide C that the projections *g* will enter the openings D, and hold the guide so that the cavity *h* in its upper end will be opposite to the openings D in the casing A. A rope being attached to the drill B, it is lowered down in the tubing and the drilling-points *m*, coming against the part *o* in cavity *h*, will straddle it and be projected out through the openings D, as indicated in Fig. 1. The operation of drilling is performed by drawing the drill B up by means of rope *n*, and then allowing it to drop, thereby causing the drilling-points *m* to be projected outward through the medium of the guide C. During the operation of drilling the pump-tubing is rotated slightly after each stroke of the drill B and its drilling-points *m*.

After operating the drill, as described, and for the desired length of time, the drill B is drawn out of the casing A, and the pump-tubing removed from the well, and the well is then cleaned out by the use of the ordinary sand-pump, the use of which is well understood by the operators of oil-wells. If the enlargement of the well is not completed, the drilling apparatus and the tubing to which it is attached are again placed in the well, and the drill B again lowered down in the tubing into the casing A, and the drilling proceeded with, as hereinbefore described. If it is necessary at any time to remove the guide C, the drill B is removed, and the grappling-tool represented in Fig. 3 is lowered down in the tubing until the hooks *s* catch under the shoulders *u* of the part marked *o*; then, by drawing on the grappling-tool by means of rope *y*, it will draw up the guide C.

After the drilling is completed the drill, guide, tubing-case A, and the well-casing are removed from the well. The well, being cleaned by the sand-

pump, the tubing, with its "working-barrel," is placed in the well, and the pump-rods placed in the tubing as usual. The well is then ready for the pumping process.

Having thus described the nature, construction, and operation of my improvement, what I claim as of my invention is—

1. The guide C provided with pivoted arms *f f*, having projections *g g* on their outer face, and made operative through the medium of the springs *i i*, as herein described.

2. In combination with the above, the case A, provided with the spiral grooves *e* for projections *g g* of the pivoted arms *f f*, and openings D D for the drilling-points *m m* of the drill B, as herein described, and for the purpose set forth.

WILLIAM FORKER.

Witnesses:

JAMES J. JOHNSTON,
GEO. H. THOMAS.