R. R. Lewis.

Boring Artesian Wells.

No. 52,425. Patented Feb. 6, 1866.

Fig. 4.

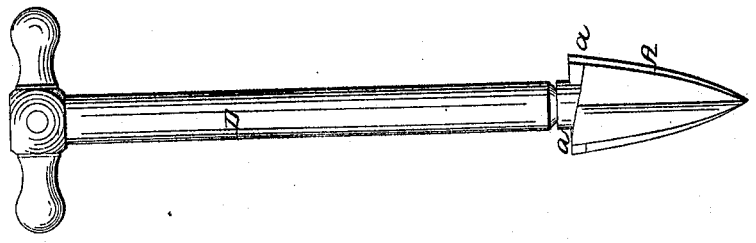


Fig. 3.

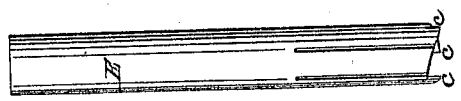


Fig. 2.

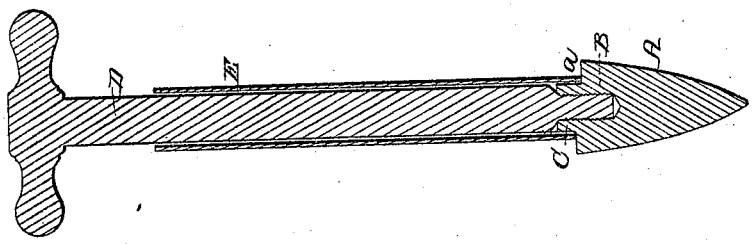
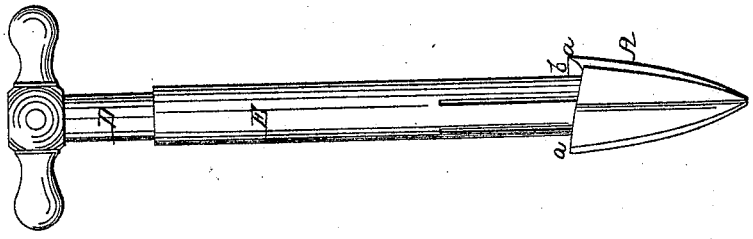


Fig. 1.



Witnesses;
J. A. Peyton
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Inventor;
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by his Attys
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UNITED STATES PATENT OFFICE.

RUSSEL R. LEWIS, OF NEW YORK, N. Y.

IMPROVED WELL-BORER.

Specification forming part of Letters Patent No. **52,425**, dated February 6, 1866.

To all whom it may concern:

Be it known that I, RUSSEL R. LEWIS, of the city, county, and State of New York, have invented a new and useful Improvement in Implements for Boring Artesian Wells; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a view, in elevation, of my improved well-borer; Fig. 2, a central section through the same; Fig. 3, a view, in elevation, of a section of the tube for the well; and Fig. 4, a similar view of the borer and its shaft.

In the usual modes of boring Artesian wells auger-shaped cutters or drills, or both, are used. When the well is deep the rod that drives the auger is liable to twist and the auger to jam, for the pressure from the top of the well on the rod has to be varied according to the condition of the strata through which the well is sunk. When a drill is used the whole weight of the rod has to be raised at every blow of the drill, and in the use of either of these instruments the tube is sunk independently.

Now, it is the object of my invention to obviate these objections to the borers in use and to sink the tube with the borer as it progresses in its work; and to this end my invention consists in the employment of a taper reamer to bore the well of a diameter larger than the tube which is to be placed in the well, and forming the top of the borer and the bottom edge of the tube with matched ratchet-teeth, so that as the borer is turned the tube will be lifted by the cam-planes or ratchets and allowed to drop upon the reamer with sufficient force to give it a proper bite in its progress, and when the well is sunk to the depth required the rod that drives the borer can be withdrawn and the tube kept in place.

I construct a burr or borer, A, of a taper form and with any desired number of cutting-edges of any determined curvature, and so grooved as to raise the detritus to its top, the diameter of the borer being greater than that of the tube E, which is to remain in the well.

Ratchet-teeth or cam-planes *a*, with one side inclined and the other perpendicular, are formed upon the top of the reamer, in which also a hole, B, is drilled to form a socket, into which the head or end C of the boring-shaft D is screwed. The male screw might, however, project from the reamer, and the female screw be cut in a socket in the shaft, if preferred.

The screws may be either right or left handed, as preferred; but it is obvious that they must turn in a direction opposite to the inclination of the cutting-edges of the reamer, as otherwise the reamer would at once be detached from the shaft.

The tubing E should be perforated or slotted near its lower edge, as shown in the drawings, to permit fluids to enter it freely. Its lower edge is likewise cut into ratchet-teeth *c* to correspond with the cam-planes *a*.

The rod or shaft D may be turned either by a removable handle or by a wheel or lever.

The operation is as follows: When the borer has penetrated far enough to admit a section of the tube the tube is placed over the rod and lowered until its lower edge rests upon the reamer. The pipe, being smaller than the reamer, is free to rise and fall in the bore of the well. Consequently as the borer revolves its cam-planes *a* will act upon the corresponding ones, *c*, on the pipe and alternately lift it and let it drop without turning a distance equal to the height of the vertical side of the cam-plane *a* and ratchet *c* combined, thus giving to the reamer a blow equal to the weight of the tube falling that distance, thus imparting a drilling as well as a boring or reaming action to the borer without pressure upon the drill rod or shank or clogging the borer, for it is obvious that the weight of the tube can be so nicely adapted to the character of the strata as not to depress the borer faster than it will clear its cut.

When the well has sunk to the required depth the rod is unscrewed from the reamer by reversing its rotation and withdrawn from the well, leaving the tube resting upon the reamer.

It is obvious that both the rod and tube can be made in sections, which can be united in the usual way as the depth of the well increases.

Another advantage of my invention is that

the caving of the well, which is a great source of loss and trouble, is entirely prevented, as the well is tubed as fast as bored.

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

1. Automatically controlling the bite of the borer by the gravity of the tube when acting by an intermittent blow, substantially in the manner described.

2. The cam-planes or ratchet-teeth on the top of the reamer and the bottom of the tube, substantially as and for the purpose set forth.

In testimony whereof I have hereunto subscribed my name.

RUSSEL R. LEWIS.

Witnesses:

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