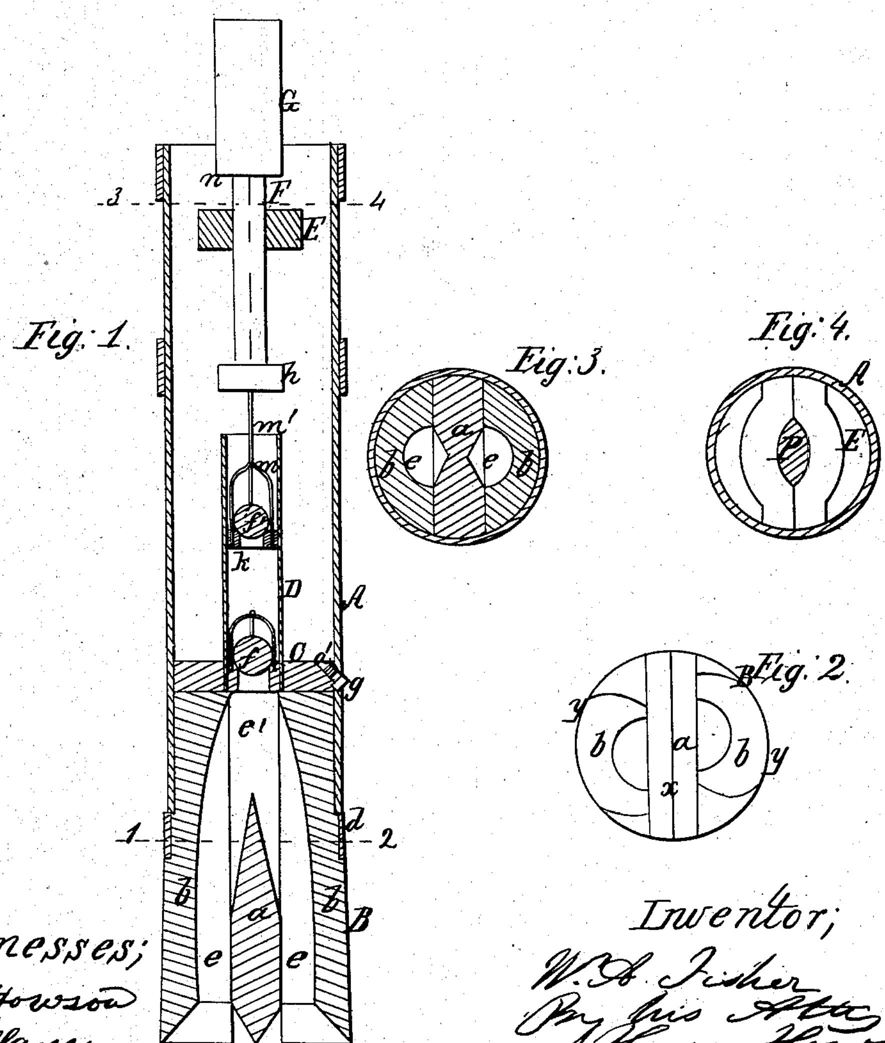
W. A. Fisher,

Boring Artesian Wells.

No. 48,388. Patented June 27, 1865.



Witnesses;
Chas Howson
W. R. Delany

Inventor;
W. A. Fisher
By his Atty
J. Henry Howson

UNITED STATES PATENT OFFICE.

W. A. FISHER, OF LOWER MERION, PENNSYLVANIA.

IMPROVEMENT IN BORING ARTESIAN WELLS.

Specification forming part of Letters Patent No. 48,388, dated June 27, 1865.

To all whom it may concern:

Be it known that I, W. A. FISHER, of Lower Merion, Montgomery county, Pennsylvania, have invented an Improved Apparatus for Boring Artesian Wells; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists, first, in a drill composed of two or more sections, each having a cutting-edge, the whole being arranged and secured together, substantially as described hereinafter, so that they may be readily detached when the drill has to be sharpened; secondly, in a drill with cutting-edges formed and arranged in respect to each other, substantially as described hereinafter; thirdly, in a tube combined with an outer casing, a drill and its valve, substantially as described hereinafter, so that as the detritus is formed it is deposited in the space between the tube and casing, from which it can be removed when the drill is raised; fourthly, in a certain arrangement of parts, described hereinafter, for disengaging the drill should it become wedged in the well.

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

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a sectional elevation of my improved apparatus for boring Artesian wells; Fig. 2, an inverted plan view of the drill; Fig. 3, a section on the line 1 2, Fig. 1; and Fig. 4, a section on the line 3 4, Fig. 1.

Similar letters refer to similar parts throughout the several views.

A is a tube or case, to the lower end of which the upper end of a drill or cutter, B, is secured by any suitable appliances. The drill B consists of a central section, *a*, and two side sections, *b b*, the lower end of the section *a* being reduced to a straight-edge, *x*, and the lower end of each of the side sections, *b*, presenting a sharp curved edge, *y*, and these curved edges being formed and arranged in respect to each other and to the straight cutting-edge of the section *a* in the manner best observed on reference to Fig. 2. In the inner side of each of the sections *b* is cut a groove or channel, *e*, which communicates at the upper end with an opening, *e'*, in the upper portion of the section *a*. A portion of the drill B, directly below the tube A, is reduced in diameter, and around this portion fits a metal band, *d*, which retains the sections of the drill in their proper relative positions.

Within the tube A, directly above the upper end of the drill, is a partition, C, from the center of which projects a tube, D, the lower end of the latter containing a valve, *f*, and communicating with the opening *e'* of the drill. In both the partition C and the case A is an opening, *a'*, which is closed by a screw-plug, *g*.

Through a cross-piece, E, in the upper end of the case A passes a bar, F, which is secured to the lower end of a rod, G, the said bar sliding in the cross-piece, its downward motion being limited by the shoulder *n*, and its upward motion by the plate *h* at the lower end of the bar.

A bucket, K, having a flange, *f'*, is adapted to the tube D, and this bucket is connected by the yoke *m* and rod *m'* to the bar F.

The rope by which the drill is suspended within the well is attached to the end of the rod G, and a reciprocating motion is imparted to the same, so as to raise and lower the drill. As this motion is continued the cutting-edges of the drill will strike the rock, and the water in the well below the drill will be raised by the action of the valves *f* and *f'*, through the openings *e e* and *e'*, into the pipe D, and from the latter into the case, the water as it ascends carrying with it the detritus, which is also carried into the case, where it settles around the pipe D. When the entire space between the pipe D and the case is filled the apparatus is raised and the plug *g* is removed, when the water, together with the detritus within the casing, will flow out through the opening *a'*.

The apparatus is turned, as usual, from time to time, so that the cutting-edges of the drill may strike the rock at different points.

When the drill has to be sharpened it is detached from the case A, the band *d* is removed, and the sections are sharpened separately.

Should the drill become wedged within the well the rod G will be raised quickly, so as to bring the plate *h* smartly against the under side of the cross-piece E, the sudden jar thus imparted to the drill tending to release it from the position in which it has become fixed.

By the above-described apparatus the detri-

tus is removed from the rock as rapidly as the latter is cut away, and is deposited in the case A, from which it may be withdrawn without detaching the same from the ropes, a large extent of cutting-surface is presented by the drill, and the latter may be quickly sharpened without the tedious manipulation necessary when it is composed entirely of a single piece of metal.

Although I have shown and described the drill as being composed of three sections, it may be made of a greater number, or of two only, if desirable.

Without confining myself to the exact construction and arrangement of parts herein described, I claim as my invention and desire to secure by Letters Patent—

1. The drill B, composed of two or more detachable sections, each having a cutting-edge, and the whole being arranged and secured together by the within-described devices, or their equivalents, substantially as and for the purpose specified.

2. A drill with a central straight cutting-edge, *x*, and a curved cutting-edge, *y*, at each side of the same, arranged in respect to each other as described.

3. The tube D, combined with the casing A, drill B, and its valve, substantially as and for the purpose specified.

4. The case A, its cross-piece E, and drill B, in combination with the sliding rod F and its plate *h*, all being arranged and operating substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

Witnesses: W. A. FISHER.

CHARLES E. FOSTER,

JOHN WHITE.