S. R. & W. S. Hunter,

Boring Artesian Wells.

No. 47,727. Patented May 16, 1865.

Fig. 3.

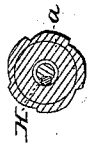


Fig. 4.

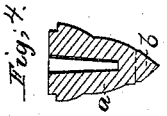


Fig. 2.

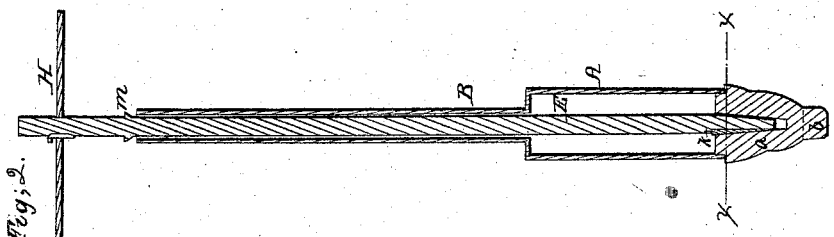
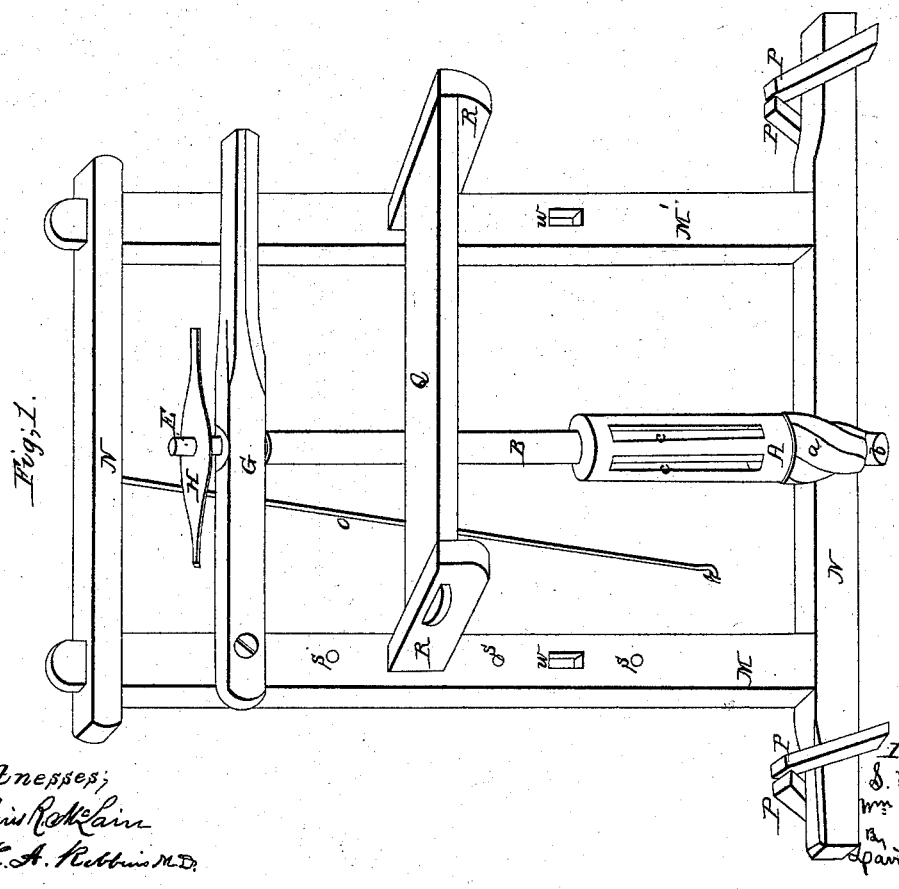


Fig. 1.



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UNITED STATES PATENT OFFICE.

S. R. HUNTER AND WILLIAM S. HUNTER, OF CORTLAND, NEW YORK.

IMPROVEMENT IN BORING APPARATUS.

Specification forming part of Letters Patent No. **47,727**, dated May 16, 1865.

To all whom it may concern:

Be it known that we, S. R. HUNTER and WILLIAM S. HUNTER, both of Cortland, in the county of Cortland and State of New York, have invented a new and useful Water-Fount or Apparatus for Sinking and Tubing Bored Wells; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of our improved apparatus when arranged preparatory to sinking the well; Fig. 2, a central vertical section of the tubes and drill; Fig. 3, a cross-section in the direction *x x* of Fig. 2, and Fig. 4 a detached vertical section of the reaming-drill at right angles to that shown in Fig. 2.

Similar letters indicate like parts in each of the drawings.

The nature of our invention consists of an improved apparatus for sinking wells and simultaneously lining the same with suitable tubing, so as that the drilling-rod shall be at all times protected from contact with the material through which the well is sunk and the water find free inlet to the well so soon as the stream is reached.

To accomplish our object we use a "reamer," *a*, which gradually enlarges upwardly to a diameter somewhat greater than that of the tubing to be used in the well, and which is formed with a drill-point, *b*, of suitable temper for breaking stones. The upper end of this reaming-drill *a b* is so reduced in size as to leave a shoulder around its perimeter, upon which the lower end of a cylinder, A, embracing accurately this upper end of the drill, loosely rests. This cylinder A is slightly smaller in diameter than the drill, and may be of any suitable length. It is firmly united to the lower end of the tubing to be used in the well, so as to form in continuation therewith an enlargement thereof, and is so pierced by numerous apertures or by a series of slots, *c c c*, Fig. 1, as that the water of any stream through which it is forced may freely pass therein.

The tubing B may be made in lengths or sections, of any suitable material, to be jointed and coupled together as the drill is driven down into the earth. Within the tubing is inserted a rod or drill-shaft, E, of smaller diameter, and which may also be made in sections, when necessary. The lower end of this rod E is made to fit accurately within a recess formed centrally in the head of the drill *a b*, and may be at pleasure readily placed therein or removed therefrom. A key, *k*, arranged in the recess of the drill, engaging with a notch cut in this end of the rod, will, however, prevent the former from turning within this recess independently of the latter, so that the two must necessarily rotate together.

The cylinder B rests so loosely upon the drill *a b* as not to be affected by its rotation, but will simply follow it, descending therewith as it penetrates the earth. In order to give pressure and such reciprocating or rotary movements to the drill as are necessary to force it down into the ground, the upper end or section of the drill-rod E is furnished with a shoulder, *m*, and thence projects up loosely through a lever, G, which bears down upon this shoulder, and it is furnished with a crank or a cross-bar, H, keyed down thereon. This lever G is pivoted at one end upon the front face of one upright of a simple frame-work, M M′ N N′, Fig. 1, which is to be elevated over the desired spot for the well and secured by suitable brace-chains, O, and stakes P P, or otherwise, as may be most convenient.

In order to accommodate the position of the operating-lever G to the descent of the rod as the drill is sunk into the earth, a series of apertures, *s s*, are arranged at regular intervals upon the upright M to receive the fulcrum-pin upon which the lever is pivoted, so that the pin may be changed from one to the other. The drill-rod E is placed centrally between the uprights, and the free end of the lever G projects somewhat beyond the frame-work M′, so as to give an effective leverage. An adjustable platform, *g*, for the workmen is secured to the uprights M M′ at a proper distance below the lever G, so as to enable them to readily bear down upon said lever and work the drill-rod E. This platform is made adjustable, like the lever itself, at varying heights, by means of a series of mortises, W W, which receive the tenons of the projecting studs R R, upon which the platform rests.

The operation of our improved apparatus is simple. The frame-work M M′ N N′ having been erected and properly secured at the right spot, the cylinder A and attached tubing B

is slipped upon the drill-rod E, whose upper end passes through a collar in the lever G until the lever bears upon the shoulder M. The cylinder is then placed vertically over and upon a suitable boring-tool, *a b*, and the inclosed drill-rod drops into a recess in the head of the tool, as already described. Now, by bearing down upon the free end of the lever, and by means of the cross-bar N imparting a rotary or reciprocating movement to the drill-rod, the boring-tool *a b* may be rapidly forced down into the earth, and as the lever G bears also upon the upper end of the tubing B, this tubing, with the attached cylinder A, will follow the drill or boring-tool closely, although not participating in its movements, and will protect the rod from contact and friction with the earth.

If the boring-tool come in contact with a stone which cannot be forced aside, the stone may be broken by tapping the head of the drill-rod with a hammer.

When water is reached, the drill-rod is removed, leaving the well complete. A pump may then be connected with the upper end of the tubing and our "water-fount" is ready for use.

An important advantage of our apparatus is found in the fact that a well is not only quickly sunk therewith, but that it is left finished at any desired depth, with a solid bottom thereto, which will keep it clean and prevent it from filling up. Another important feature thereof consists in the simplicity of the whole apparatus and the facility with which it may be transported, set up, and operated.

From the peculiar manner of arranging the drill and drill-rod it is adapted for use in any character of soil. As the tubing is smaller than the cylinder which rests upon and follows the drill, it is not subjected to pressure or resistance, and hence may be made of earthenware or other cheap material.

We are aware that in existing forms of apparatus provision is made for forcing down tubing to inclose the drill-rod, the tubing being made to follow the drilling or boring tool closely; but in all such machines known to us the drilling-tool is firmly connected with the drilling-rod, so as to form part thereof, and is consequently necessarily made smaller in diameter than the tubing, in order that it may be withdrawn through the same when the well has been sunk to the desired depth, leaving it bottomless.

We do not claim, broadly, therefore, boring the earth and sinking a tube at one operation; but

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination of a boring or drilling tool, *a*, with the lower end of a cylinder or tube, A B, and with a detachable drilling-rod, E, for the purpose of boring and bottoming a well, when said cylinder or tubing is smaller in diameter than the upper end of the tool *a* and is made to rest thereon, substantially in the manner herein set forth.

2. The combination of the hand lever G with the frame-work M N, the drill-rod E, and tubing B of our improved apparatus, arranged and constructed substantially in the manner and for the purpose herein set forth.

The foregoing specification of our improved water-fount or bored well for pumps signed by us this 28th day of January, A. D. 1865.

S. R. HUNTER,
WM. S. HUNTER.

In presence of—
C. A. MERRICK,
D. H. BURR.