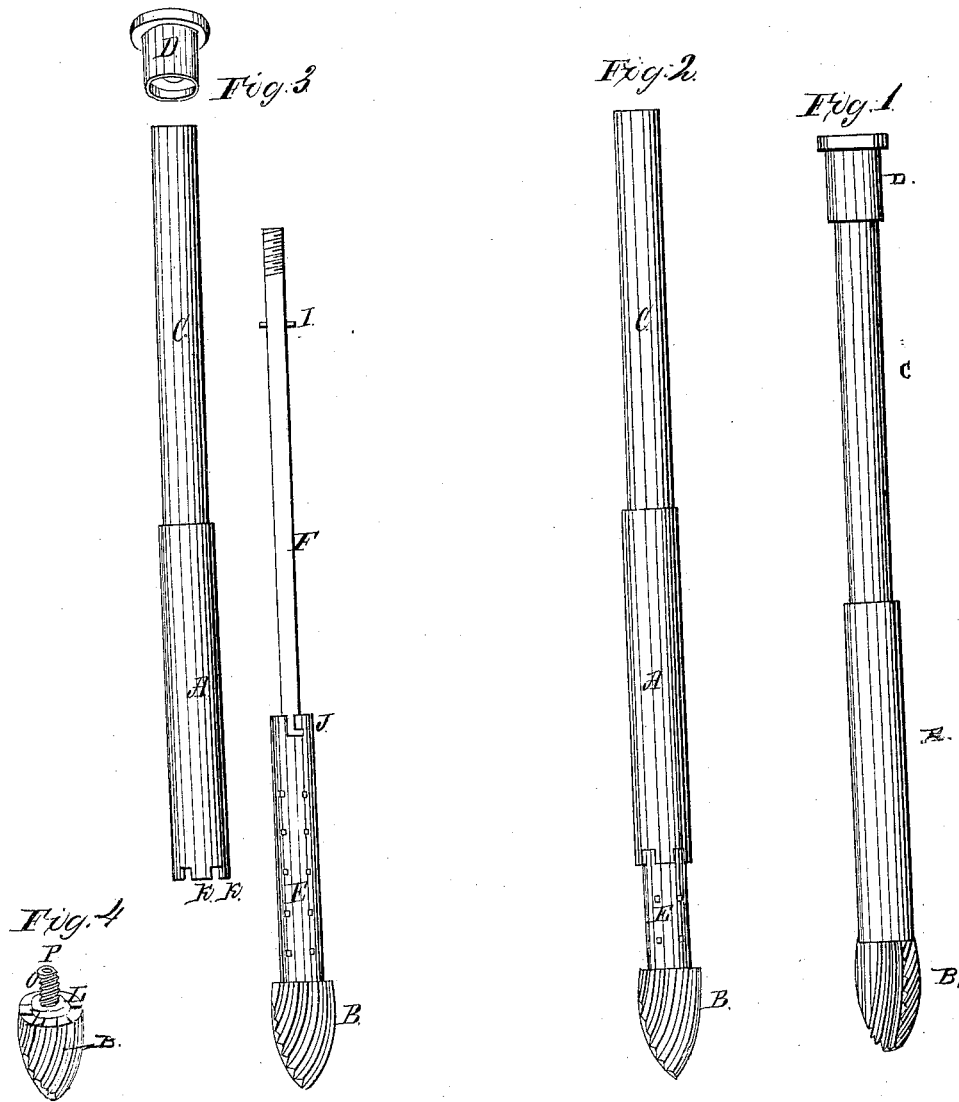


Pettingill & Mericle.

Well Tubing.

N^o 50,949.

Patented Nov. 14, 1865.



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UNITED STATES PATENT OFFICE.

G. D. PETTINGILL AND L. H. MERICLE, OF CORTLAND, NEW YORK.

IMPROVED MODE OF SINKING AND TUBING WELLS.

Specification forming part of Letters Patent No. 50,949, dated November 14, 1865.

To all whom it may concern:

Be it known that we, GEORGE D. PETTINGILL and LEVI H. MERICLE, both of the town of Cortland, in the county of Cortland and State of New York, have invented a new and Improved Apparatus for Sinking and Tubing Wells; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon.

Figure 1 shows our improved apparatus combined and ready to be sunk into the earth, in which A represents the lower portion of the tube; C, the upper portion; B, the sinking or boring tool, having a narrow flange or rim about its upper end, which embraces the lower end of the tube; and D a cap which slips over the upper end of the tube. Inclosed in this tube A C, and not shown in this figure, is the operating-rod of the boring-tool B, the lower end of which is screwed into the center of a projection from the upper end of the said boring-tool, and upon its upper end is screwed the cap D. The lower end or portion of this operating-rod is surrounded by a filter or strainer, the lower end of which is screwed upon the projections above mentioned from the upper end of the boring-tool B.

Fig. 2 shows the same apparatus with the cap removed and the boring-tool B sunk a short distance below the lower end of the tube A C, disclosing the filter or strainer, (marked E,) of which the lower end is screwed upon a projection from the upper end of the boring-tool B, and the upper end is inclosed in the tube A C.

Fig. 3 shows the several parts of the same apparatus more in detail, in which D represents the cap removed; A C, the tube removed; B, the boring-tool; F, the operating-rod, with its lower end screwed into the center of the projection from the upper end of the boring-tool B; and E, the filter or strainer surrounding the lower portion of the operating-rod F, and screwed upon the projection from the upper end of the boring-tool B. In the upper end of the filter or strainer E is a slot (marked J) having a right angle, into which the pin (marked I) near the upper end of the operating-rod F will fit when the operating-rod is

changed end for end, and by means of which the filter or strainer E can be removed by unscrewing it from the projection from the upper end of the boring-tool B and drawing it up out of the well through the tube A C. In the lower edge of the tube A C are several projections, (marked K K,) which fit into holes made in the upper end of the boring-tool B, just inside the rim or flange which embraces the lower end of said tube when combined as shown in Fig. 1.

Fig. 4 shows the boring-tool detached from the other parts of the apparatus, in which P represents the place into which the lower end of the operating-rod is screwed; O, the projection from the upper end of the boring-tool, upon which the filter or strainer is screwed; and L L, the holes into which the projections from the lower edge of the tube are received when the apparatus is put together, as shown in Fig. 1.

In constructing our apparatus we make the tube A C, Fig. 3, of iron, of any required diameter for light porous soils, all the way of one size; but for heavy unyielding soils we make the upper portion the thickness of the tube smaller than the lower portion, to lessen the friction encountered in sinking the tube, and join them by screwing the lower end of the upper portion into the upper end of the lower portion, having appropriate threads cut upon each, or we slip the ends mentioned together and rivet them firmly or solder them, as in the accompanying model. From the lower edge of the tube A C we cut portions out, leaving the parts marked K K, Fig. 3, projecting about half an inch below the upper edges of the cut-away portions of the tube, which we fit into holes cut into the upper end of the boring-tool B, Fig. 4, and which are there represented by L L. The object of this arrangement is to enable us, when sinking the apparatus connected together, as shown in Fig. 1, into heavy unyielding soils, to turn the boring-tool B by turning the tube A C, which we do with a heavy gas-fitter's wrench.

We make the boring-tool B, Fig. 4, for light porous soils free of stone of cast-iron, and for other soils of steel, with a narrow flange or rim about its upper end to embrace the lower end of the tube A C and prevent its splitting when the apparatus is forced into the earth.

We make the filter or strainer E, Fig. 3, of

heavy wire-cloth or a piece of porous earthen tube when water is reached in quicksand, and in other cases of a short piece of metal tube, perforated or slotted, as may be most suitable, the lower end of which we screw upon or attach to the projection from the upper end of the boring-tool B in such way as may be most convenient.

The operating-rod F, Fig. 3, we make of a round iron rod, a little less in diameter than the diameter of the bore of the tube A C, the lower end of which we screw into the center of the projection from the upper end of the boring-tool B, at the place marked P, Fig. 4, each having cut upon it the appropriate screw for that purpose. This operating-rod we make a little longer than the tube A C, and upon its upper end, which projects a little above the upper end of the tube A C when in position, as in Fig. 1, we screw the cap D. This cap D we make with a narrow rim or flange about its lower end, which embraces the upper end of the tube A C and prevents its splitting when being forced into the earth.

The construction of the remaining portions of our apparatus have been sufficiently described in our explanation of the accompanying drawings, or will be seen at a glance by an examination of the different parts therein represented.

The manner of using our apparatus is substantially as follows: We first attach the several parts together, as shown in Fig. 1, and, having selected the place where we desire to sink the well, we place the point of the boring-tool upon it and commence driving the whole apparatus into the earth by means of a sledge or pile-driver, striking upon the top of the cap D. In case no stone or other obstruction is encountered this driving is continued until the water is reached, the tube A C and the boring-tool B being constantly turned by means of the gas-fitter's wrench before mentioned. When the water is reached the cap D is removed and the boring-tool is driven a short distance farther into the earth by striking with the sledge or pile-driver upon the upper end of the operating-rod F, Fig. 3, when the several parts of the apparatus will be substantially in the position shown in Fig. 2, the upper end of the boring-tool being a foot or more below the lower end of the tube A C. The operating-rod is then unscrewed and removed from the tube A C, and the other end

inserted so that the pin I, Fig. 3, will enter into the right-angled slot J, Fig. 3, by means of which the strainer E, Fig. 2, is unscrewed from the boring-tool B and drawn up through the tube A C. A suitable pump is then attached to the upper end of the tube A C, and the well is completed. In case it is uncertain at what precise point water will be reached and it is desired to determine that fact, the cap D is removed and the boring-tool B is driven down about one-fourth of an inch, in the way above described, but not far enough to allow the projections K K, Fig. 3, to escape from the holes L L, Fig. 4, in the upper end of the boring-tool B, when the operating-rod is removed and the pump attached, which by its action will at once determine whether water has been reached or not. If not, the cap D is replaced and screwed on so as to draw the boring-tool B firmly up to its place, as shown in Fig. 1, when the driving is again commenced and continued until water is reached. In case water is reached in quicksand, we use the porous earthen filter or strainer, instead of a metal one, and leave it in the well all the time.

The advantages of our improved apparatus, constructed as shown and described, are, that with it wells can be sunk through clay, or any soil composed in great part of clay, without the tube being stopped up, as always happens when the tube is perforated or slotted, and when a vein of water is reached in a clayey soil a cavity can be made by driving down the boring-tool, which will permit free access of the water to the lower end of the tube, and by using the earthen strainer we can obtain water in quicksand.

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

1. The combination of the tube A C with the boring-tool B, the operating-rod F, and the cap D, in the manner and for the purpose substantially as shown and described.

2. The combination of the strainer E with the boring-tool B, the operating-rod F, and the pipe A C, in the manner and for the purposes substantially as shown and described.

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Witnesses:

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