(No Model.)

L. B. HART.

WELL BORING APPARATUS.

No. 457,713. Patented Aug. 11, 1891.

Fig. 1.

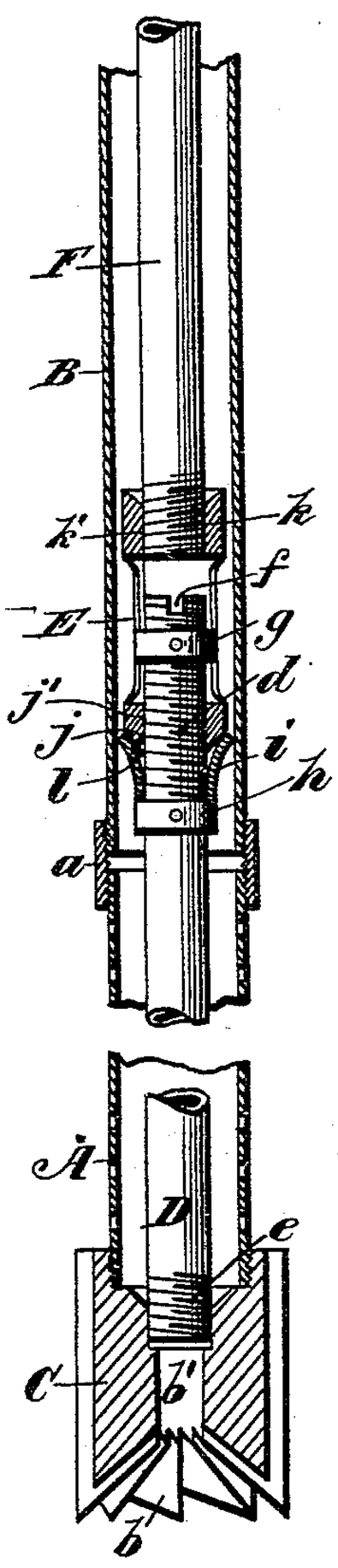
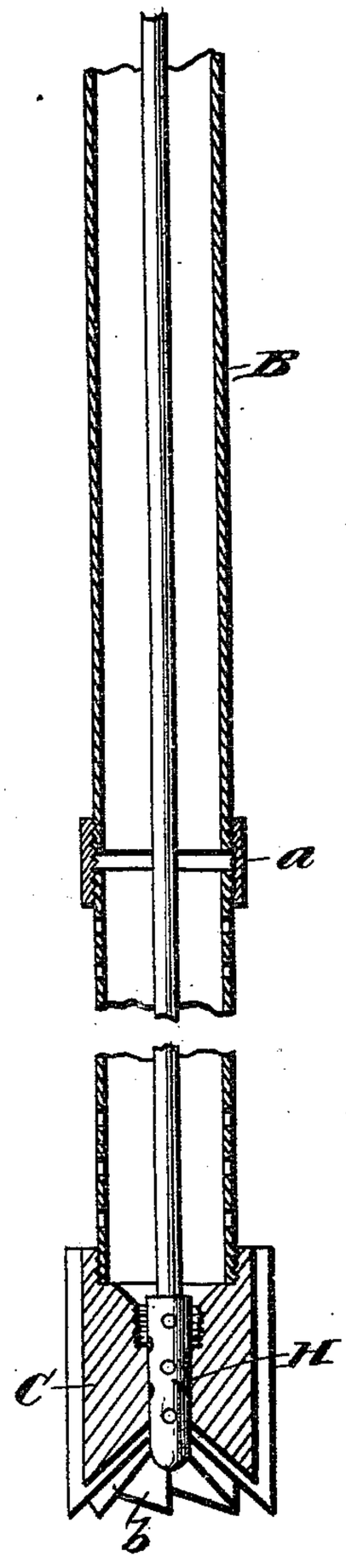


Fig. 2.



Witnesses.
Robt Everett.
J. A. Rutherford

Inventor.
Lewis B. Hart.
By
James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

LEWIS B. HART, OF PLAQUEMINE, LOUISIANA.

WELL-BORING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 457,713, dated August 11, 1891.

Application filed April 29, 1891. Serial No. 390,898. (No model.)

To all whom it may concern:

Be it known that I, LEWIS B. HART, a citizen of the United States, residing at Plaquemine, in the parish of Iberville and State of Louisiana, have invented new and useful Improvements in Apparatus for Boring Wells, of which the following is a specification.

This invention relates to certain new and useful improvements in apparatus or devices for boring Artesian and other wells; and it consists, substantially, in such features of arrangement, construction, and combinations of parts as will hereinafter be more particularly described, and pointed out in the claims.

This invention has for its object to provide for the quick and ready insertion and removal of the hydraulic tube which passes down through the casing and strainer and is screwed into the cutter at the bottom of the strainer, and for expanding the packing which forms a water-tight space between the hydraulic tube and casing.

In the accompanying drawings, Figure 1 is a vertical sectional view illustrating my invention; and Fig. 2 is a similar view with the packing and adjoining or holding devices therefor removed from around the hydraulic tube, the said figure being intended simply to indicate the manner of closing the cutter by a hollow plug after the well has been finished or completed.

In carrying my invention into effect I employ the usual well-known casing, to the bottom of which is coupled in any desired manner a perforated strainer or tube, also of well-known form. The strainer has secured to its lower end any preferred form of cutter or boring-tool by which the boring of the well is effected either by driving or revolving the same by the use of any suitable power. The cutter which I preferably employ in this instance consists of a suitable stock having extending radially therefrom a series of blades or wings, the lower edges of which are beveled outwardly, which edges may be brought to any degree of fineness desired. The said cutter is formed with a central opening extending through the same vertically, and this opening is closed up by a hollow plug after completion of the well. The upper portion of the said vertical opening is tapped with a left-hand screw-thread, into which is screwed or received the correspondingly-threaded lower end of the hydraulic tube, through which water is forced or pumped for causing dirt and sand to be washed to the surface at the place where the well may be being bored. The upper end of the hydraulic tube is also formed with a left-hand thread extending down the same for a suitable distance, and arranged thereupon is a suitable device for enabling the proper adjustments to be made, as well also as to effect the lifting of said tube whenever it is desired to remove the same, as will more fully hereinafter appear.

Reference being made to the several parts of the drawings by the letters marked thereon, A represents the strainer, and B the casing, the two being properly united or held together by means of the coupling-sleeve *a*.

C represents the boring or cutting-tool which I preferably employ in this instance, the same being formed with a number of radially-extending blades or knives *b* and having in its center a vertical opening *b'*, the upper end of which is tapped with a left-hand thread *c*, as shown. Into said opening is screwed the lower end of the hydraulic tube D, which is provided for a suitable distance from its upper and lower ends with corresponding left-handed threads *d* and *e*, respectively.

By reference to Fig. 1 it will be seen that the upper edge of the hydraulic tube is notched, as at *f*, while surrounding said tube at suitable distances apart are two fixed collars *g* and *h*, the lower one *h* of which has resting upon it a packing-sleeve or gasket *i*, of any suitable material, the same being loose on the rod and slightly flaring at the top, as shown, so as to admit of it being more easily expanded to close the space between the tube and casing. Working upon the upper end of the hydraulic tube is what may be termed a "compound nut" E, the same being elongated, as shown, and hollow throughout its main body, its bottom or lower end *j* being of sufficient thickness and tapped interiorly with a left-hand screw-thread *j'*, while its top or upper end *k* is also of sufficient thickness, but tapped interiorly with a right-hand screw-thread *k'*. The lower portion *j* thereof is coni-

cal or tapering at *l*, so as to be received by the upper flaring packing-ring or gasket *i* in the manner shown, and thereby tend to more thoroughly expand such packing when the nut E is screwed down upon the tube D. The upper portion *k* receives the correspondingly-screw-threaded end of a pipe F, which is employed for unscrewing the hydraulic tube from the cutter C, so as to enable the latter, together with the nut E and packing, to be elevated or raised after the boring of the well has been completed.

The operation of the above-described preferred construction is as follows: The nut E is screwed up on the hydraulic tube D until the lower portion *j* of said nut reaches the upper fixed collar *g* of the tube, and then the said tube is lowered to the bottom of the screen, and by passing a suitable flat wrench down through the central opening of the portion *k* of the nut and causing the same to enter the notches in the upper end of the tube the said tube is screwed into the upper end of the cutter by turning it in a left-hand direction. The nut E is then screwed down upon the tube D until the lower conical portion thereof enters the packing-ring, whereupon the latter becomes expanded and the space between the casing and tube is made perfectly water-tight.

To remove the tube from the screen and casing, the pipe F is let down through the top of the casing and its screw-threaded end screwed into the upper portion of the nut, which action will cause the nut E to move up on the tube D until the upper fixed collar *g* thereof is reached. The said collar *g* then becomes a lock-nut between the parts, and by continued turning the tube D is unscrewed from the cutter.

By forming the cutter C integral with a central screw-threaded opening *b'* and screwing the lower end of the hydraulic tube D directly into such opening I simplify the construction and therefore materially economize in the cost of manufacture over the prior construction exhibited in my Letters Patent No. 411,660, wherein the hydraulic tube is screwed into a nut inserted within a tubular body to which the cutter is detachably connected by a screw-threaded neck.

In Fig. 2 I have merely illustrated the manner of closing the opening in the cutter by a suitable hollow plug H, and as this forms no part of my present invention no especial reference will be made thereto.

Having thus described my invention, what I claim is—

In an apparatus for boring wells, the combination, with the casing, the strainer, and the cutter, of the hydraulic tube formed with a left-hand thread a suitable distance from each end and provided with the fixed collars, the flaring packing-ring *i*, resting on the lower collar, and the elongated compound nut having the right and left hand screw-threaded portions at its upper and lower ends, respectively, substantially as described, and for the purposes set forth.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

LEWIS B. HART. [L. S.]

Witnesses:

JNO. L. DARDENNE,

J. M. VENET.