

J. A. CHANDLER.
Reamers for Earth-Borers.

No. 149,639.

Patented April 14, 1874.

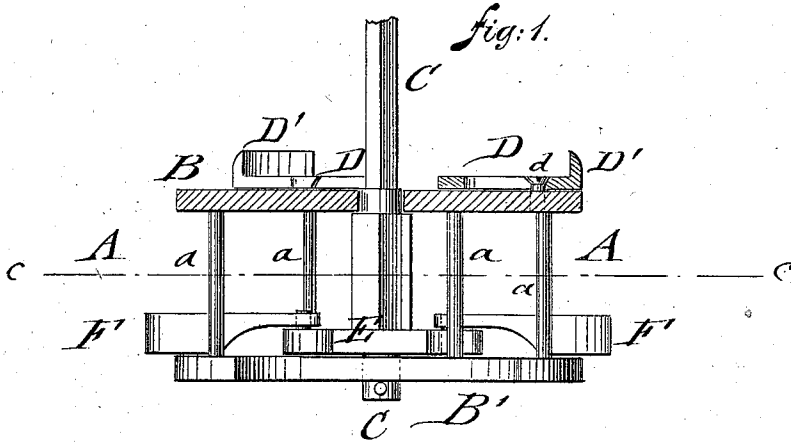


fig: 2.

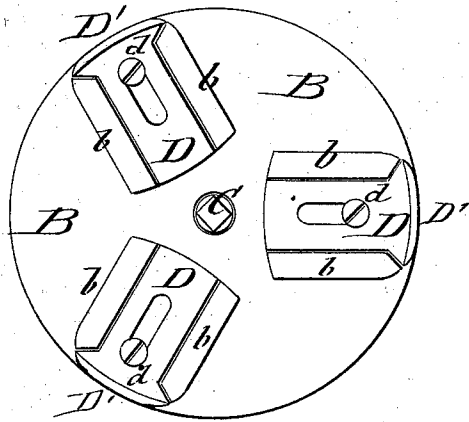
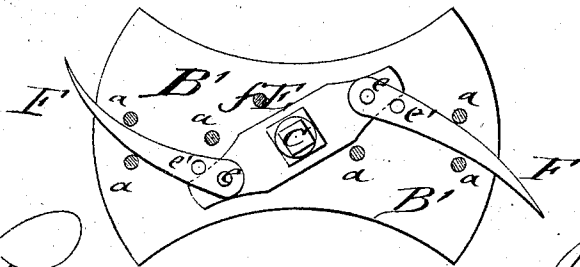


fig: 3.



WITNESSES:

Chas. Nida
J. A. Chandler

INVENTOR:

J. A. Chandler
 BY *Munnell*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN A. CHANDLER, OF MONTICELLO, IOWA.

IMPROVEMENT IN REAMERS FOR EARTH-BORERS.

Specification forming part of Letters Patent No. **149,639**, dated April 14, 1874; application filed March 14, 1874.

To all whom it may concern:

Be it known that I, JOHN A. CHANDLER, of Monticello, in the county of Jones and State of Iowa, have invented a new and Improved Reaming Attachment to Earth-Boring Apparatus, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a sectional side elevation of my improved reaming attachment to earth-boring apparatus; Fig. 2, a top view; and Fig. 3, a horizontal section of the same on the line *c c*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of my invention is to construct a reaming attachment to earth-boring apparatus, by which the lower section of a well below a stratum of quicksand may be quickly enlarged or extended, for the purpose of carrying the curbing down to the bottom of the well, and producing a well of uniform width.

The present mode of boring wells through a stratum of quicksand between the stratums of blue clay or other solid deposits consists in lowering a curbing or casing of sufficient size into the well, and forcing it down through the quicksand to a lower solid layer, so that the sand from the sides cannot replace that taken out, and retard the progress of the work. If no water has been struck, so that it is required to penetrate deeper into the ground, an auger of smaller size is used, so that it can pass down through the same. The boring is then continued in the usual manner till sufficient water is obtained. The smaller cut requires the insertion of a smaller curbing, which is lowered through the first curbing and fitted to the bottom of the well. This, however, causes several inconveniences: In the first place, the "jog" upon the bucket, which is generally caught in its downward passage; and, secondly, the constant working through of the sand under the bottom of the top curbing, by which the well is gradually filled and rendered useless.

For the purpose of obviating these defects of the present system of well-boring, I use, after the cut has been continued with the

smaller auger till water is obtained, a reaming attachment to the shaft, having adjustable guide-plates and sliding cutters, for enlarging the narrower section of the well below the curbing gradually, from the bottom upward to the full width of the same, so that the curbing slides down to the bottom of the well, and produces thereby, after the earth has been removed, a well of equal width throughout its full depth.

In the drawing, A represents the reaming attachment, which consists of an upper disk-shaped plate, B, of smaller diameter than the size of curbs generally used. A lower plate, B', of the same diameter, but with recessed sides to lighten the same, is connected by strong vertical rods *a* with the upper plate B, both plates turning on the auger-shaft C. The upper plate B is provided with slotted plates D, which are made adjustable in grooved strips *b*, and set to the required width by set-screws *d*. The vertical shoulders D' of plate D guide the attachment in the well below the curbing of the sand, and allow the steady working of the same in cuts of different sizes. The connecting-rods *a* are so arranged that the inner ones form the stops for a sliding piece, E, which is keyed to shaft C, and to whose ends are pivoted, by suitable pins *e*, the curved sliding cutters F. The cutters F are guided between the outer rods *a*, and also made adjustable, to correspond with the guide-plates D, by having holes *e'* in the rear ends.

By turning the shaft in one direction, the cutters are carried forward, sliding along rods *a*, and projecting to some distance beyond the lower plate B'. They are carried back by turning the shaft in the opposite direction till they are within the lower plate, their inner position being also defined by stop-pins *f*, acting on piece E.

The reamer is attached to the shaft after water has been reached, and passed, with adjusted guide-plates and cutters, through the curbing to the bottom of the well. The shaft is then worked in opposite direction, which forces the cutters in outward direction, and enlarges the narrower section from the bottom upward, to the exact width of the curbing. As soon as

the extension of the well reaches the curb, the same slides down to the bottom, and produces, with the casing placed above, a well of uniform diameter along its full depth.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent—

The reaming attachment to well-boring apparatus, consisting of main plate B, with ad-

justable guide-plates D D', and rigidly-connected lower main plate B', with adjustable sliding cutters F, operated in combination with auger-shaft C, substantially in the manner and for the purpose described.

JOHN A. CHANDLER.

Witnesses:

CHAS. W. GURNEY,
DEXTER PAGE.