C. D. PIERCE.

Earth Augers.

No. 141,664. Patented August 12, 1873.

Fig. 1.

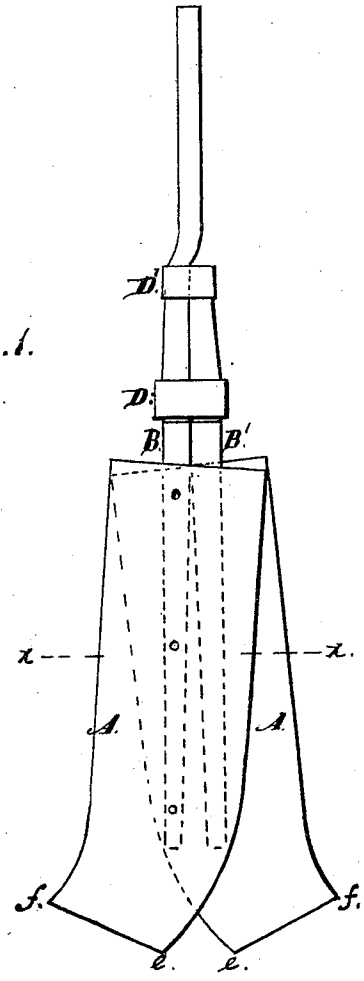


Fig. 3.

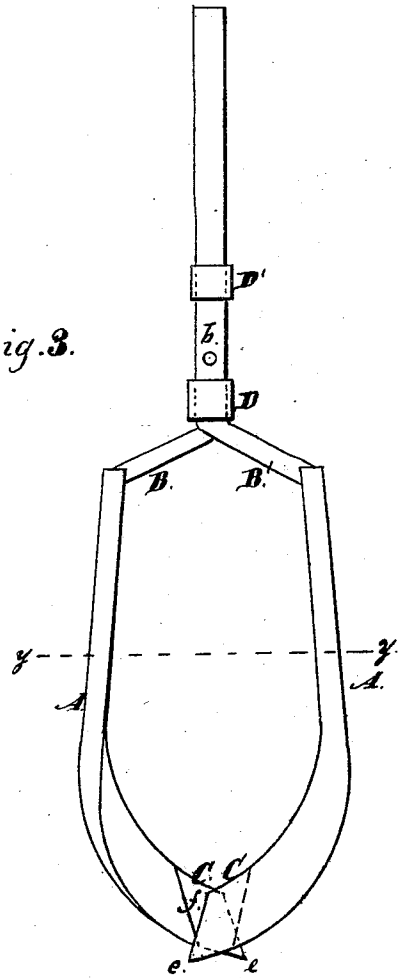


Fig. 2.

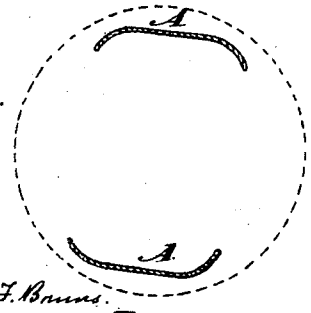
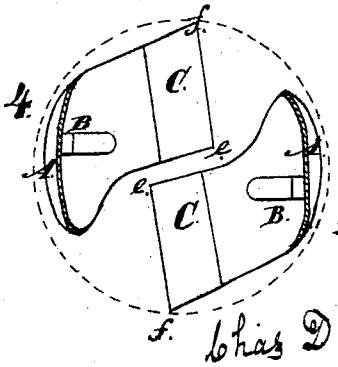


Fig. 4.



Witnesses:

Heinrich F. Bruns.

John W. Mundays

Inventor:

Chas D Pierce

UNITED STATES PATENT OFFICE.

CHARLES D. PIERCE, OF LAWRENCE, KANSAS.

IMPROVEMENT IN EARTH-AUGERS.

Specification forming part of Letters Patent No. **141,664**, dated August 12, 1873; application filed June 30, 1873.

To all whom it may concern:

Be it known that I, CHARLES D. PIERCE, of Lawrence, in the county of Douglas and State of Kansas, have invented certain Improvements in Earth-Augers, of which the following is a specification:

This invention relates to certain improvements in the form and contour of the pods and cutting surfaces of the auger; and consists in the peculiar arrangement of the cutting surfaces of the blades, all of which will more fully hereinafter appear; and the invention consists particularly in the parts and contrivance which are definitely claimed at the close of this specification.

In the accompanying drawings, which form a part of this specification, Figure 1 is a side elevation of my improved auger. Fig. 2 is a horizontal sectional contour of the pods at the line *x x* of Fig. 1. Fig. 3 is a side elevation of the said auger taken at the other quarter. Fig. 4 is a horizontal section of the same at the line *y y*, looking downward.

Like letters of reference made use of in the several figures indicate like parts.

To enable those skilled in the art to make and use my invention, I will proceed to describe the same with particularity, making use in so doing of the aforesaid drawing by letters of reference thereto.

In the said drawing, A A represent the pods, made preferably of quarter-inch plate-steel, and of a horizontal outline, shown at the contour section, Fig. 2, so that the pods occupy together only about one-half of the entire circle, leaving ample space for the passage of air between the open sides and the bore when the auger is raised. These pods, attached to suitable arms B B′, descend in a nearly vertical direction, being, however, so arranged that the diameter of the horizontal circle increases as they descend—that is to say, the bottom portion of the auger is of the greatest diameter, and the diameter diminishes as the top is approached. This conical shape facilitates the working of the auger, and also its withdrawal by lessening the friction. As the bottom is neared, these pods are twisted, so as to pass one another with an opposite twist, as shown in the drawing. The lower portion of these pods, after forming the cup-like curve shown, are shod with knives or cutters C, which stand opposed to one another at opposite sides of the center, and are inclined in two directions, as shown, so that, when the auger is revolved, they will engage the earth at the inner corners or points *e e* first, and cut down gradually with a draw-cut. This feature of having the inner points *e e* lower than, and in advance of, the outer points *f f* is a valuable feature, especially in cutting through soft rocks or slates, which may lie in the path of the apparatus. This auger so constructed will cut through even sandstone, and anything except solid hard rock. The outside points or corners *f f* of the blades stand out farther from the center than any other point of the apparatus, as is indicated at Fig. 4, where the dotted circle indicates the size of the bore cut by the auger. It will be seen that these points *f f* are the only portions which come in contact with the sides of said bore. The sides of the auger between the pods are left open for the free passage of the air and water, but from the fact that nearly the whole bottom is filled by the twisted portion of the pods, and by the knives, the contents of the auger, when raised, are prevented from falling through, being held laterally by the sides of the bore, and by the pods.

I find, by experiment, that any soil, except quicksand, may be raised without trouble by this open-sided auger, with the additional advantage over close-sided augers that my auger will come up freely without suction.

I propose, in the event of striking quicksand, to use a sand-pump to remove the quicksand, which is much better and cheaper than it can be removed by having a sand-trap or other similar contrivance in the bottom of a close-sided auger.

The arms B B′ above the pods are curved toward the center, and are placed one upon the other, and secured together by a pivot, *b*, passing through both. One of the arms—say, B—is extended up to form connection with the shaft by which the auger is revolved. The other, B′, is short, and the two are held together by means of the collars D D′, the collar D being slipped down past the pivot nearly to the fork, while the collar D′ is only slipped low enough to hold the upper part in place.

To insure the perfect fitting of these collars the vertical portion of the short arm B′ is tapered toward the top, and the collars are made with corresponding tapered apertures, so that when driven down they wedge themselves fast.

When the auger is withdrawn from the ground these collars are moved upward out of the way, and the auger is unloaded by swinging the pods apart upon the pivot *b*.

Having thus fully described my invention, that which I claim is—

The earth-auger, consisting of the open-sided, tapered, twisted pods A A provided with the inclined knives or cutters C C having the inner corners *e e* the lowest and in advance, and having the outer corners *f f* farther from the center than any other portion of the auger, substantially as specified.

CHAS. D. PIERCE.

Witnesses:
JOHN W. MUNDAY,
HEINRICH F. BRUNS.