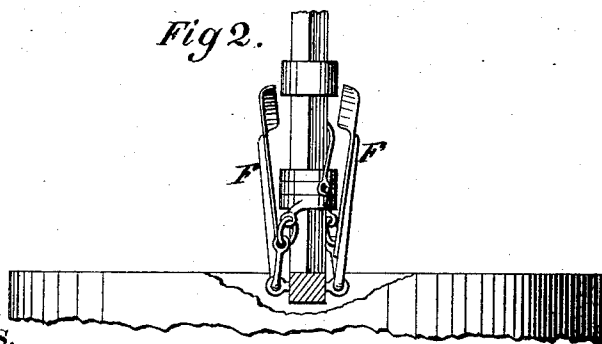
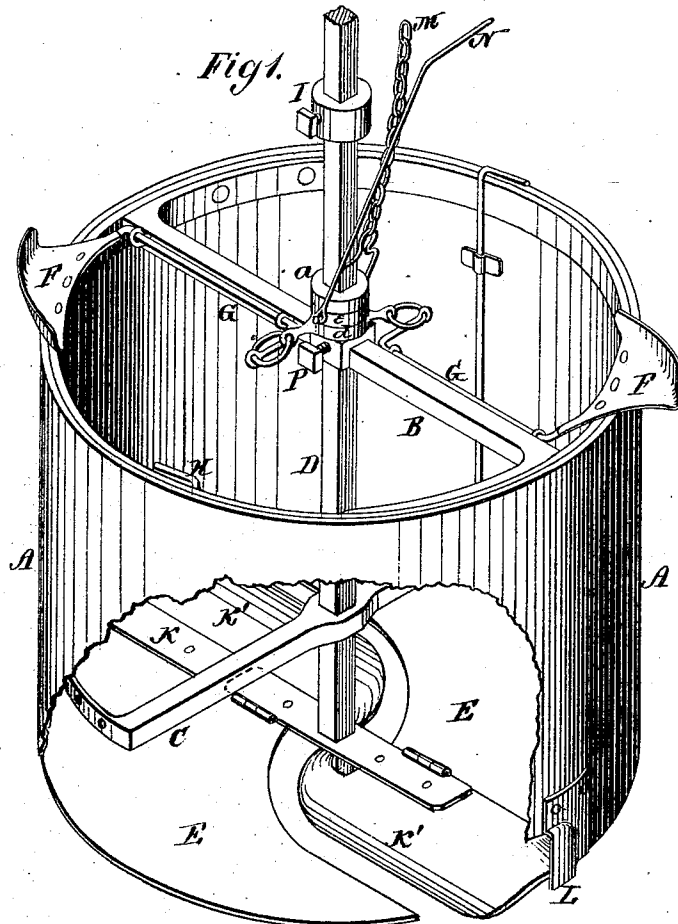


J. B. CHRISTIAN.
Earth-Augers.

No. 158,032.

Patented Dec. 22, 1874.



WITNESSES.

J. P. Theodore Lang.
C. C. Evert.

INVENTOR

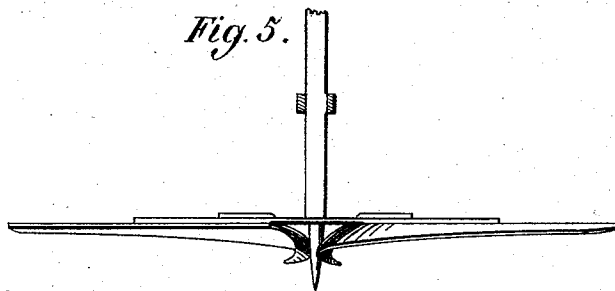
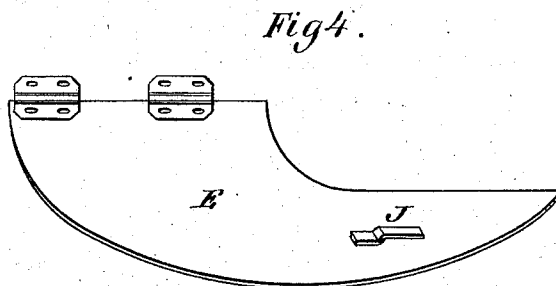
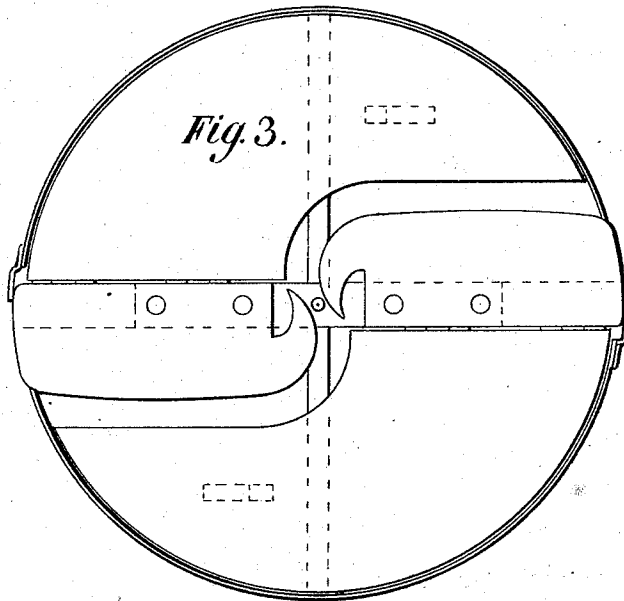
J. B. Christian.

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UNITED STATES PATENT OFFICE.

JOHN B. CHRISTIAN, OF HAMBURG, IOWA.

IMPROVEMENT IN EARTH-AUGERS.

Specification forming part of Letters Patent No. **158,032**, dated December 22, 1874; application filed June 3, 1874.

To all whom it may concern:

Be it known that I, JOHN B. CHRISTIAN, of Hamburg, in the county of Fremont and in the State of Iowa, have invented certain new and useful Improvements in Well-Auger; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of certain devices for boring earth-wells, the peculiarities of which will be hereinafter described.

In the annexed drawings, making part of this specification, Figure 1 is a perspective of my machine with a portion of the side of the bucket cut away to show the internal construction.

The other figures show detached parts.

In the figures, A represents the bucket, which is made of metal, of cylindrical shape, and of suitable size. This bucket is provided with two cross-braces, B and C, one at its top and one near its bottom, both of which are provided at their centers with square openings, through which passes the square metallic auger-shaft D. Secured to the bottom of the auger-shaft is a cross-bar, K, and to this cross-bar are secured two knives, K' K'. Hinged to the cross-bar are two wings, E E, which are separated sufficiently from the knives to allow earth to pass up between them, but to retain it after it has passed up. Two crank bars or rods, H H, run down the sides of the bucket, and catch under hooks J J on the wings E E, to hold them in position. L L represent knives on the sides of the bucket at its lower edge. The lower end of shaft D is pointed, and projects below the bucket to act as a center guide. P represents a set-screw, which passes through the cross-bar B, and secures it to the shaft D, when desirable. *a* and *d* represent two collars, which surround the shaft D above the cross-bar B, which are connected together, but which have a collar interposed

between them, which acts independently of either. The lower collar *d* is connected by means of a link on two sides to two bars, G G; and to the outer ends of these bars are connected two wings, which act as knives, and which are marked F F. These knives project over and beyond the sides, so that they will cut a curbing larger than the diameter of the bucket. To the intermediate collar *e* is connected a bale, and to this bale is connected a chain, M, and a rod, N. The chain is for the purpose of lifting the wings F when the bucket is to be withdrawn, so that it will pass freely. These wings lift to a perpendicular position, as seen in Fig 2, and thus the bucket passes through an opening larger than its diameter. The rod N serves to return the wing-cutters F to their cutting position. I represents a collar, which is confined to the shaft D by means of a set-screw. This collar is for the purpose of preventing the bottom of the bucket from dropping out when it is being emptied.

The object of having the collar *e* loose is to keep the chain from winding around the shaft during the operation of boring.

After the earth is drawn up the wings E E are set free by the rods H H, and dropping by their hinges they discharge the earth from the bucket.

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

1. The reamer-knives F F overlying the sides of the bucket, and operated by means of the rods G G and chain M, as and for the purpose set forth.

2. The set-screw P, in combination with the cross-bar B and shaft D, as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 24th day of April, 1874.

J. B. CHRISTIAN.

Witnesses:

WILLIAM H. BEACH,
S. D. LONG.