H. CULL.

Earth-Auger.

No. 163,159. Patented May 11, 1875.

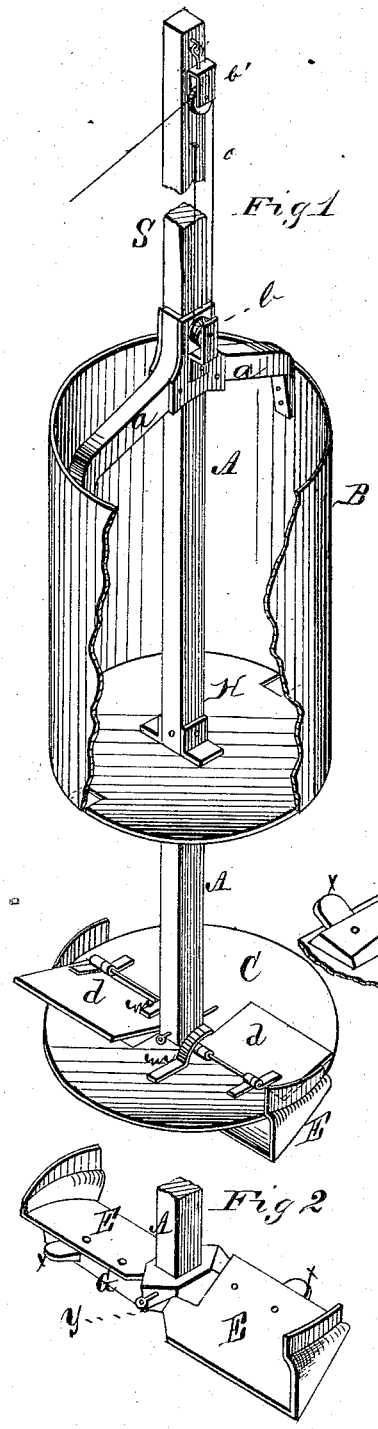

Fig 1

Fig 2

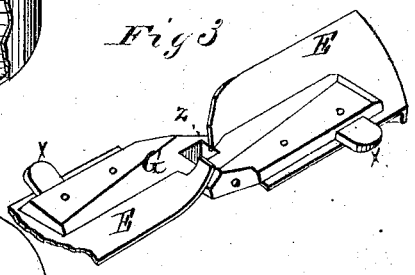

Fig 3

WITNESSES
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UNITED STATES PATENT OFFICE.

HENRY CULL, OF MARSHALLTOWN, IOWA.

IMPROVEMENT IN EARTH-AUGERS.

Specification forming part of Letters Patent No. **163,159**, dated May 11, 1875; application filed April 13, 1875.

To all whom it may concern:

Be it known that I, HENRY CULL, of Marshalltown, in the county of Marshall and in the State of Iowa, have invented certain new and useful Improvements in Earth-Augers; 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 of an earth-auger, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to make and use the same, I will now more fully describe it, referring to the annexed drawing, forming a part of this specification.

Figure 1 represents a perspective view with a part of the earth-casing broken away in the front. Fig. 2 represents a perspective of the cutters or wings. Fig. 3 represents a bottom view, showing the metallic cutters from the under side.

A represents a vertical shaft, made rectangular or polygonal in form, and having attached thereto the circular disk H. B represents a cylindrical jacket or casing, having arms *a a* at its top, which are connected together and form an opening, through which the shaft A is passed. Attached to the side arms, on a vertical line with the shaft, is a pulley, *b*. Also, attached near the top of the shaft is another pulley, *b'*. The end of the cord or chain C is suitably connected to the shaft A, and passes thence under the pulley *b*, and thence up and over the pulley *b'*. Attached to the lower end of the shaft A is an angular piece of metal, G, having a central opening, *z*, and inclined, as shown, and to the inclines are affixed L-shaped cutters E E.

The projecting wings *x x* may be formed with said metallic piece, as shown in Figs. 2 and 3, for the purpose hereafter described. This angular piece of metal G can be removed from the shaft at will, or attached thereto, by any suitable means—such, for instance, as the set-screw *y*, as shown in Fig. 2.

C represents a circular disk, provided with two hinged plates or valves, *d d*, which open upward.

When in operation this disk is securely held upon the shaft just above the metal casting G and its cutters E E. When this disk and the ears *x x* are formed on the metal piece G the outer edges of the disk will rest upon these ears, and be prevented from being thrown too far downward.

In the operation of my invention, where the soil is composed of gravel or clay the disk C is dispensed with, the casting G and its cutters E being attached to the end of the shaft, and the device rotated until the cylinder or case B is filled, or nearly filled, with dirt. The bucket is then entirely raised from the opening made in the earth, after which the cylinder B is raised upon the shaft A, and the earth allowed to free itself therefrom. As the cylinder is raised upon the shaft the disk H will force the dirt outward therefrom.

In using my auger in earth where there is quicksand, the disk C is employed with its valves *d* directly over the cutters E E, so that the quicksand will be taken up through the valves and held by the disk C, the upper part of said disk being provided with small stops *m m*, to prevent the valves from being raised too high.

My invention can be cheaply constructed and easily applied for boring wells, and can be easily repaired if broken.

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

1. In combination with a shaft, A, and its pulley *b'* and circular disk H, the movable cylinder B, having arms *a a*, and the pulley *b*, substantially as and for the purposes set forth.

2. The combination of the shaft A and disk H, movable cylinder B, open at both ends, the metallic piece G, with its L-shaped cutters E E, substantially as and for the purposes set forth.

3. The combination of the shaft A and its disk H, the movable cylinder B, and detachable L-shaped cutters E E, and the detachable disk C, provided with valves *d d*, all substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of April, 1875.

HENRY CULL.

Witnesses:

WM. L. BRAMHALL,

J. M. MASON.