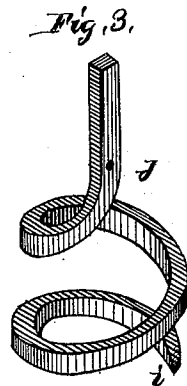
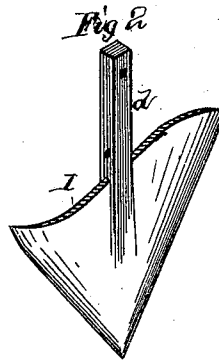
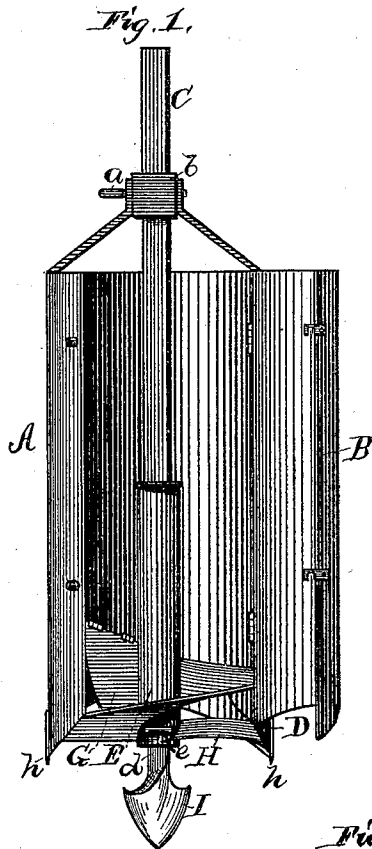


F. A. MONTGOMERY.

WELL-AUGER.

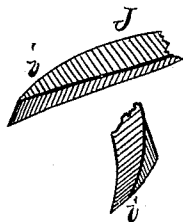
No. 170,445.

Patented Nov. 30, 1875.



WITNESSES:

Jas. F. Duhamel.
Thomas. Byrne.



INVENTOR:

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PER
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UNITED STATES PATENT OFFICE.

FRANCIS A. MONTGOMERY, OF EATON RAPIDS, MICHIGAN.

IMPROVEMENT IN WELL-AUGERS.

Specification forming part of Letters Patent No. **170,445**, dated November 30, 1875; application filed August 21, 1875.

To all whom it may concern:

Be it known that I, FRANCIS A. MONTGOMERY, of Eaton Rapids, county of Eaton and State of Michigan, have invented certain new and useful Improvements in Well-Auger, of which the following is a specification:

The nature of my invention consists in the construction and arrangement of a well-auger, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, which forms a part of this specification, and in which—

Figure 1 is a side elevation of my well-auger with the door of the bucket thrown open to show the interior thereof. Fig. 2 is a perspective view of the drill. Fig. 3 is a perspective view of a worm used with my well-auger.

A represents the bucket or elevator, provided with a hinged door, B, in any of the known and usual ways. At the upper end of the bucket A are suitable inclined braces or bars, connecting it with a hub or collar, b, through which the auger-shaft C passes, and to which it is fastened by a pin, a. At the lower end of the bucket, within the same, is a spiral flange, D, with a vertical tube, E, in the center. The lower end of the auger-shaft C is inserted in the upper end of this tube E, and fastened by a pin. At the upper end of the spiral flange D is hinged a slush-valve, G, to prevent the mud, &c., from passing out while the bucket is being elevated, and at the lower end of said spiral flange is a curved knife, H, running radially from the center tube to the bucket. I represents the drill-point, which is provided with a shank or stem, d, to be inserted in the lower end of the tube E, and fastened therein by a pin, e. The drill-point I is made in triangular shape, with its side edges sharpened and slightly twisted. This compels the auger to run straight, and it penetrates and stirs up gravel and earth in a thorough manner. To the lower edge of the bucket

A are secured the cutters h, which extend below the cutting-edges of the spiral D and the knife H, and thus cut a free circular path for the bucket, whose diameter is slightly in excess of the diameter of said bucket.

In material such as slate, stone, coal, bed-rock, &c., a drill is used of the same shape as the drill-point I, but the full size of the auger.

J represents a worm, having a shank at its upper end, and fastened in the tube E by a pin. The lower end of the worm has an expanding pitch, is sharpened to form the cutting-point i, and the worm is the full size of the hole being bored. This worm is used in ground having stone or any hard substances in it, for raising the same with ease.

It will not only raise loose stones, such as small boulders or cobble-stones, by inclosing them within its helical grasp, but its wedge-shaped or chisel point will cut through thin strata of shale and similar rock without impeding the advance of the auger proper, to which it is attached.

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

1. A well or earth auger composed of the cylindrical casing A, provided with the cutters h, the central tube E, the spiral flange D, having the valve G' hinged thereto, and a straight cutting-edge, the curved knife H, and any suitable drill-point, I, all arranged and operating substantially as described and set forth.

2. The worm J, provided with the wedge-shaped point i, curved downward with an increasing or expanding pitch, in the manner substantially as described, for the purpose set forth.

In testimony that I claim the foregoing as my invention I hereunto affix my signature this 17th day of August, 1875.

FRANCIS A. MONTGOMERY.

Witnesses:

A. C. DUTTON,
H. Z. WILLIAMS.