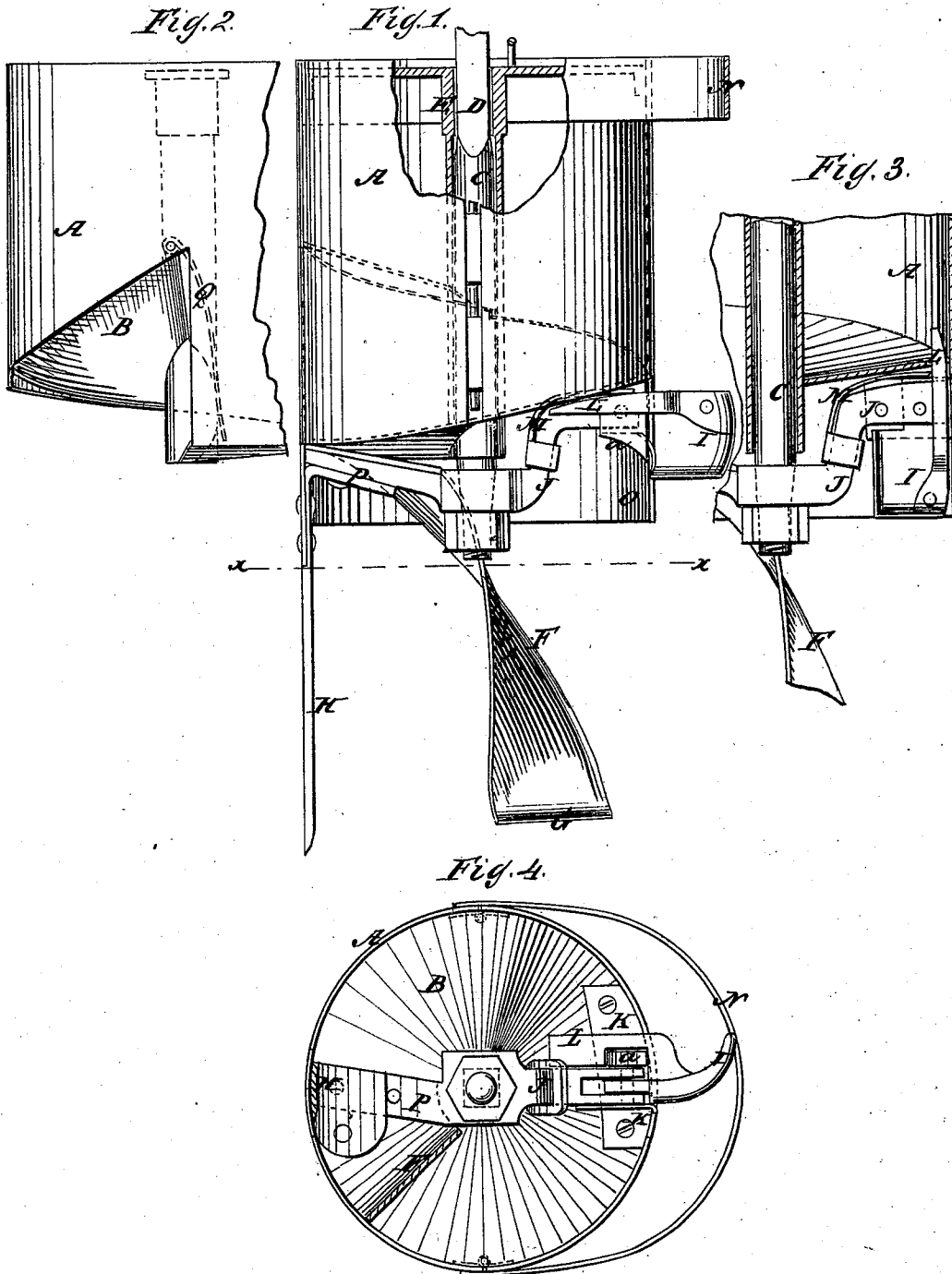


W. McK. BURNS.
EARTH-AUGER.

No. 173,207.

Patented Feb. 8, 1876.



WITNESSES:

E. Woff
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UNITED STATES PATENT OFFICE.

WILLIAM MCK. BURNS, OF CONCORDIA, KANSAS.

IMPROVEMENT IN EARTH-AUGERS.

Specification forming part of Letters Patent No. **173,207**, dated February 8, 1876; application filed December 4, 1875.

To all whom it may concern:

Be it known that I, WM. MCK. BURNS, of Concordia, in the county of Cloud and State of Kansas, have invented a new and Improved Earth-Auger, of which the following is a specification:

My improvement in earth-augers consists of a novel construction and arrangement of the cutting-bit; also, of the contrivance of the reamer and the case, all as hereinafter described.

Figure 1 is a side elevation of my improved earth-auger, with a part in section. Fig. 2 represents a part in side elevation. Fig. 3 is a sectional elevation, and Fig. 4 is a horizontal section taken on the line *x x*.

Similar letters of reference indicate corresponding parts.

A is the auger or bucket, having a spiral bottom, B, and being fitted on the auger-shaft C, so as to slide up and down freely for raising the earth out without taking out the auger.

A guide, consisting of the square part D, and the correspondingly-shaped part E of the tube serves to turn the auger to the right position relatively to the bed F, when the bucket drops down to the position for filling.

The bit consists of the long spiral steel plate F, formed for the most part of its length on an acute pitch for carrying the earth away from the cutting-edge quickly, so as not to clog on the bit, while it is carried to a much more obtuse pitch on the point G, corresponding to the required rate of movement of the auger into the ground. The bit is connected to the shaft independently of the bucket, so that the latter can be taken off and the bit used without it.

Opposite to the cutting-bit is a straight blade, H, projecting down from the bucket as far as the cutting-bit, to balance the lateral strain on the latter and guide the bucket straight.

I is a reamer, which is pivoted on the end of the arm J so as to swing out into the working position, as represented in Figs. 1 and 4, and down under the bucket, as represented in Fig. 3, when it is not required to cut. When in the working position a T-plate, K,

is bolted on the bottom of the bucket, to take the strain of turning the reamer off the arm J. It is also used for throwing the reamer out without taking the auger out of the bore, for which it has a beveled edge, *a*, which is designed to push the arm L of the reamer down, and thus throw the reamer out.

The reamer is thrown down under the bucket when the T-plate is taken off by drawing the auger up until the reamer strikes the tubing, which pushes it down. When not in the working position, its arm L extends up through a hole in the bottom of the bucket, so that the arm J aids in turning the bucket.

A spring, M, keeps the reamer in both positions by acting on it as represented in Figs. 1 and 3.

A stay-brace, N, will be attached to the top of the bucket to run against the wall of the well and steady the auger.

A circular plate, O, is attached to the arms J and F of the auger below the high part of the spiral bottom and behind the reamer, to make the bucket more uniform as a guide to direct the auger in the bore and to carry the earth from the reamer into the bucket; also, to prevent the earth on the bit from sliding off into the space cut by the reamer. The bucket will have a valve, Q, to close the throat, and prevent the escape of the load when it is hoisted.

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

1. An auger-bucket, having shaft and guide-tube squared at the upper portion D E, but round from thence to the bit, as shown and described, so that when the shaft becomes twisted by torsional strain near the bit, the shaft shall not become locked in the tube.

2. The bit F, constructed on an acute pitch in the body portion, with a less acute point, G, substantially as specified.

3. The combination with bucket of a blade, H, bit F, and reamer I, made independent of bucket but connected together, as shown and described, for the purpose of allowing the bucket to be hauled up by itself.

4. A reamer, I, pivoted and provided with spring M, as and for the purpose set forth.

5. The combination of arm J and T-plate K, to support operative parts, in the manner specified.

6. The combination of detachable T-plate K with the pivoted reamer and the auger-bucket, substantially as specified.

7. The circular plate O, in combination with an earth-auger, substantially as specified.

WILLIAM McK. BURNS.

Witnesses:

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T. L. STURGES.