W. H. GATES.

Improvement in Earth-Augers.

No. 131,872. Patented Oct. 1, 1872.

Fig. 1.

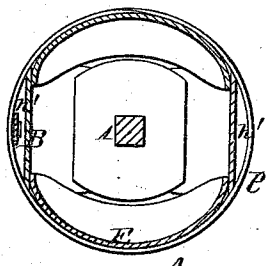


Fig. 4.

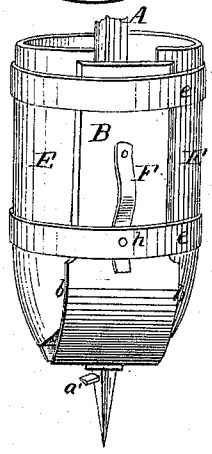


Fig. 2.

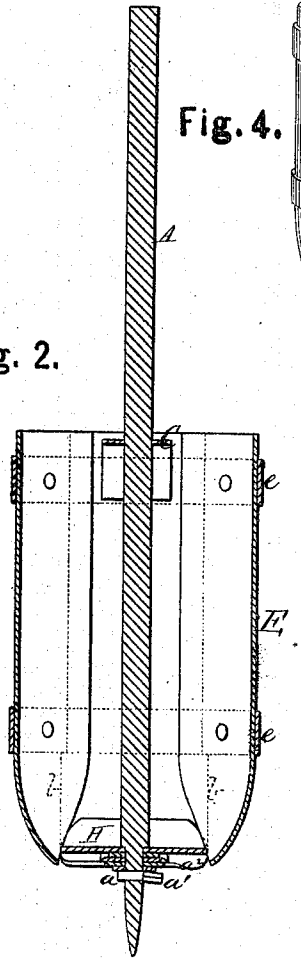
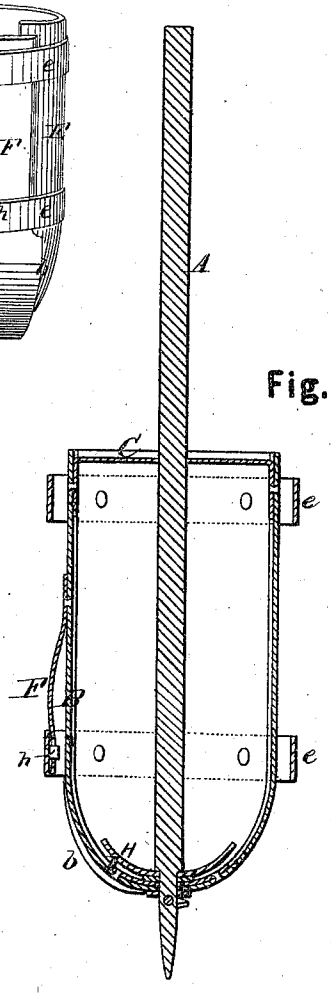


Fig. 3.



WITNESSES.

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AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

WILLIAM H. GATES, OF PERRY TOWNSHIP, IOWA.

IMPROVEMENT IN EARTH-AUGERS.

Specification forming part of Letters Patent No. **131,872**, dated October 1, 1872.

To all whom it may concern:

Be it known that I, WILLIAM H. GATES, of Perry Township, in the county of Buchanan and State of Iowa, have invented a new and valuable Improvement in Earth-Augers; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a horizontal section of my invention; Figs. 2 and 3 are vertical sectional views; and Fig. 4 is a perspective view of the same.

This invention has relation to well-augers; and consists in the construction and novel arrangement of cutters and removable sand-case, substantially as hereinafter described

In the drawing, A represents the auger-shaft, pointed at its lower end; B, the cutters, formed from a strip of metal bent to the shape of the letter U. The shaft passes through the lower part of said strip, and is keyed below it. *a* is the key, having a sharpened projection, a^1, to cut the clay. On opposite sides of the shaft angular notches a^2 are cut. *b b* represent flanges bent outwardly at the edges of the cutter-plate B, and sharpened. These flanges constitute the knives for cutting away the wall of the well. The noticeable curvature or convexity of the lower part of the cutter-strip causes the auger to cut easily and gradually into the earth. According as the clay is loosened it is received between the sides of the cutter, and removed by raising the auger. C designates a cross-brace securing together the upper ends of the plate B, and supporting the shaft A. D represents a plate to strengthen the cutter-plate at its bottom part.

The auger, as thus far described, is adapted for use in boring through clay. The space between the sides of the bent cutter-strip is sufficient in size to receive comparatively large stones that may be loosened by boring.

For working in sand I provide a case to hold the same as it is loosened and while being drawn from the well. This case is composed of a pair of concavo-convex or semi-cylindrical plates, E, rounded at their lower ends, where they have a spoon-form, as shown, so that when arranged they shall leave but a small space between their lower ends and the bottom of the cutter-strip. The plates E are united by means of two circular metallic bands, *e e*. When the case is arranged these bands pass around the legs of cutter-plate B, the latter closing the spaces between the two plates E. The bands *e e* are elastic, and bind the case-plates to the cutter-strip.

F represents a spring secured to one of the cutters B, and slotted at its lower end to receive a stud, *h*, projecting from one of the bands, and used to hold the plates E in position. With the plates E is used a concavo-convex plate, H, secured to the shaft at the bottom of the auger. The object of this plate is to contract the spaces at the bottom of the auger, to prevent the sand from falling back into the well. Between the bands *e* and the cutter-strip spaces h' are left. These spaces allow the passage of air to the bottom of the well, to enable the auger to be readily withdrawn. If desired, the cutters B may be constructed separately and afterward united.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The earth-auger, consisting of the plane strip B, bent into U-shape, forming the cutting-lips, the transverse plate C, the key-cutter $a\ a^1$, and the square shaft A passing through the transverse plate and cutter-plate, and ending in a point through which the key-cutter $a\ a^1$ passes, substantially as specified.

2. In an earth-auger, the combination of the plane strip B, bent in U-shape to form the cutting-lips, with the concave case-plates E, circular bands *e*, stud *h*, and fastening-spring F, substantially as specified.

3. In an earth-auger, the combination of the strip B, bent in U-shape to form the cutting-lips, with the concave case-plates E, circular bands *e*, cross-plate C, square shaft A, and bent base-plate H, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM H. GATES.

Witnesses:

C. C. P. BALDWIN,

R. O. LAIRD.