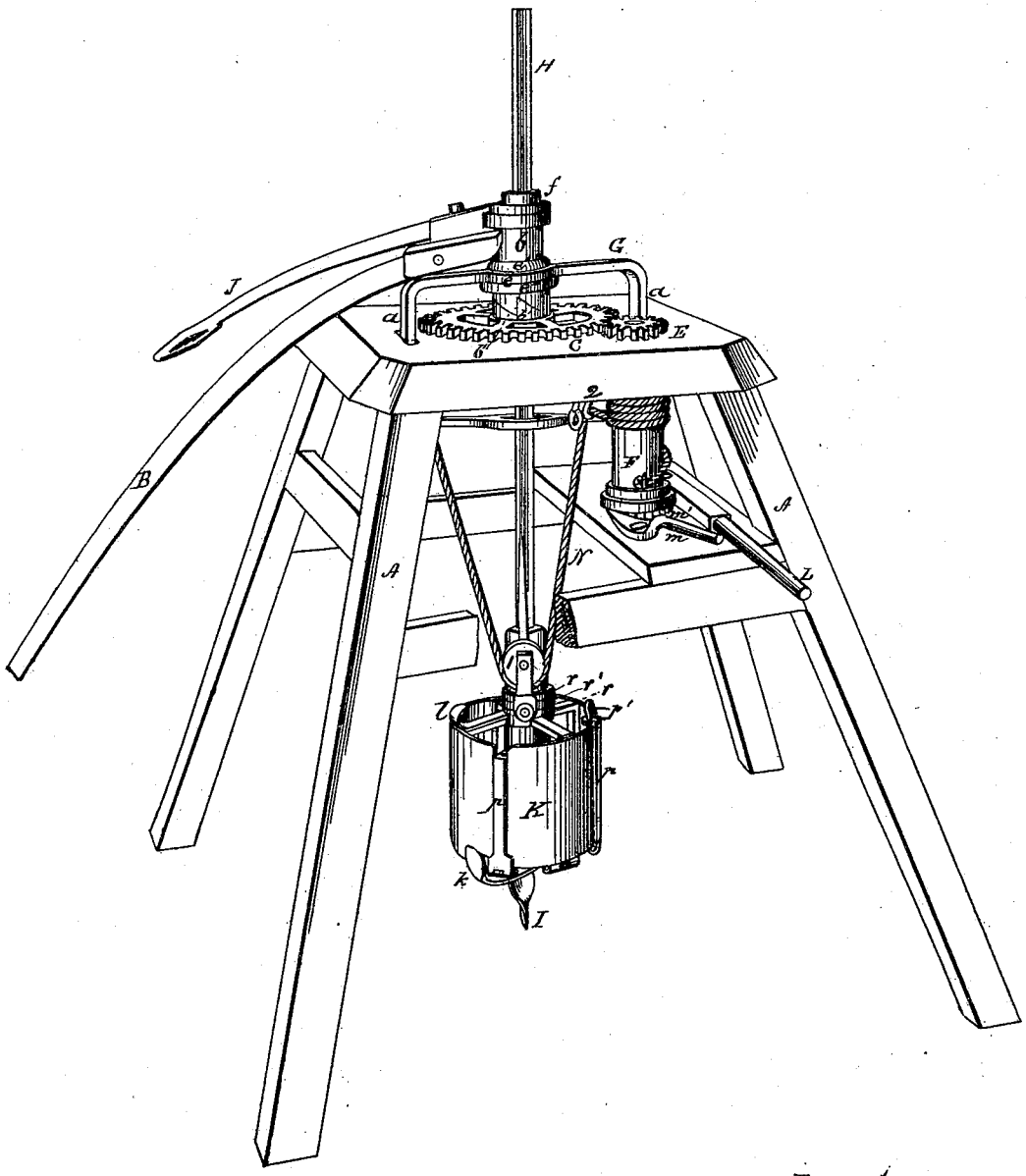
3 Sheets—Sheet I.

# O. MARTIN.

## EARTH-AUGER.

No. 180,046. Patented July 18, 1876.

*Fig. 1.*

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3 Sheets—Sheet 2.

# O. MARTIN.

## EARTH-AUGER.

No. 180,046. Patented July 18, 1876.

Fig. 2.

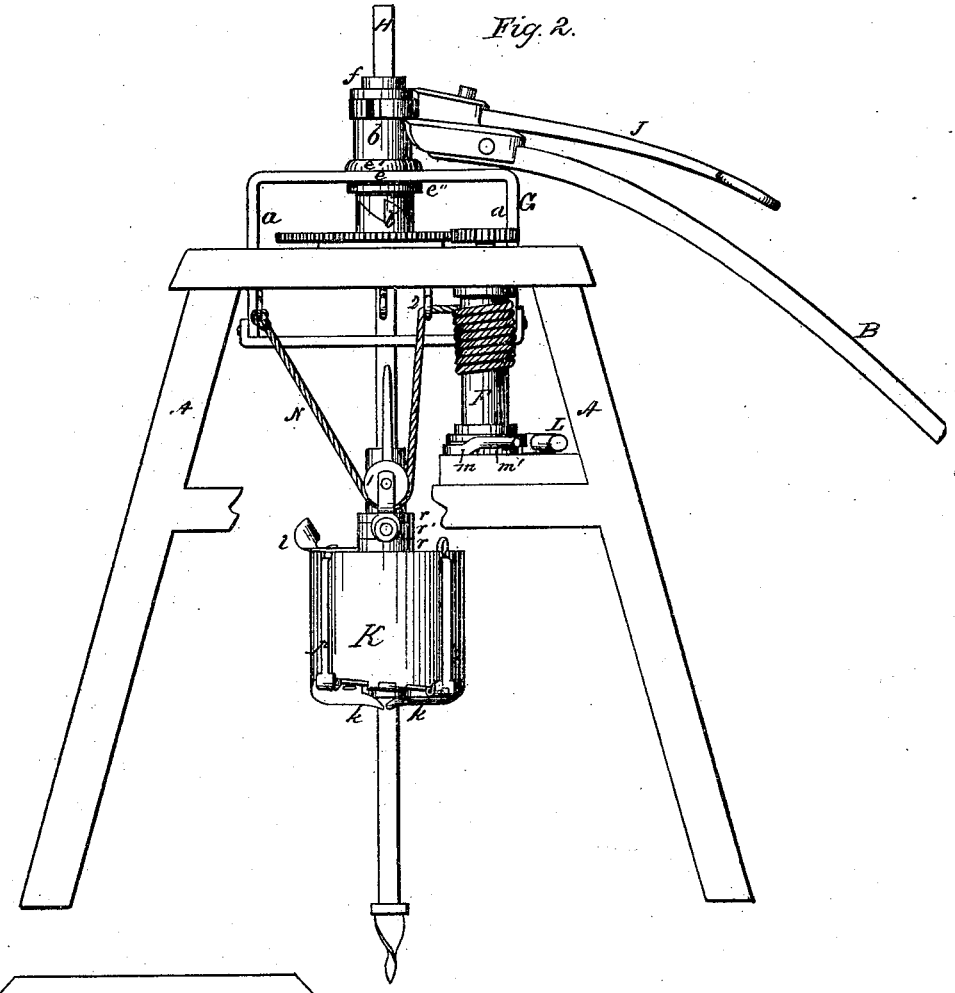
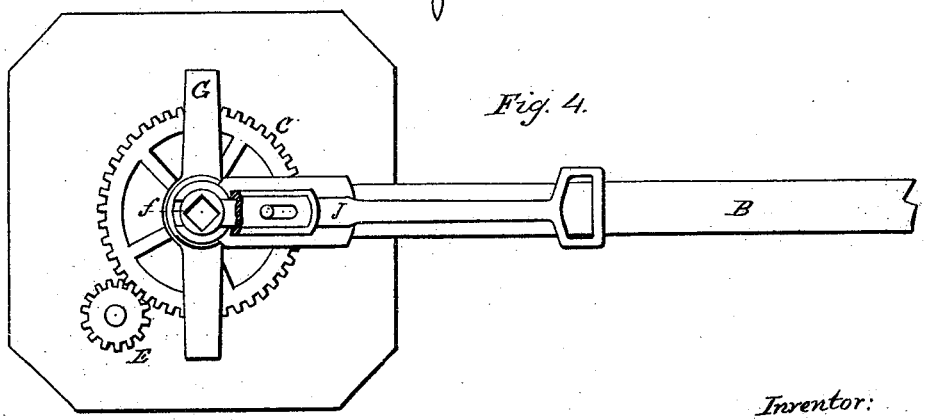



Fig. 4.

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3 Sheets—Sheet 3.

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## EARTH-AUGER.

No. 180,046. Patented July 18, 1876.

Fig. 3.

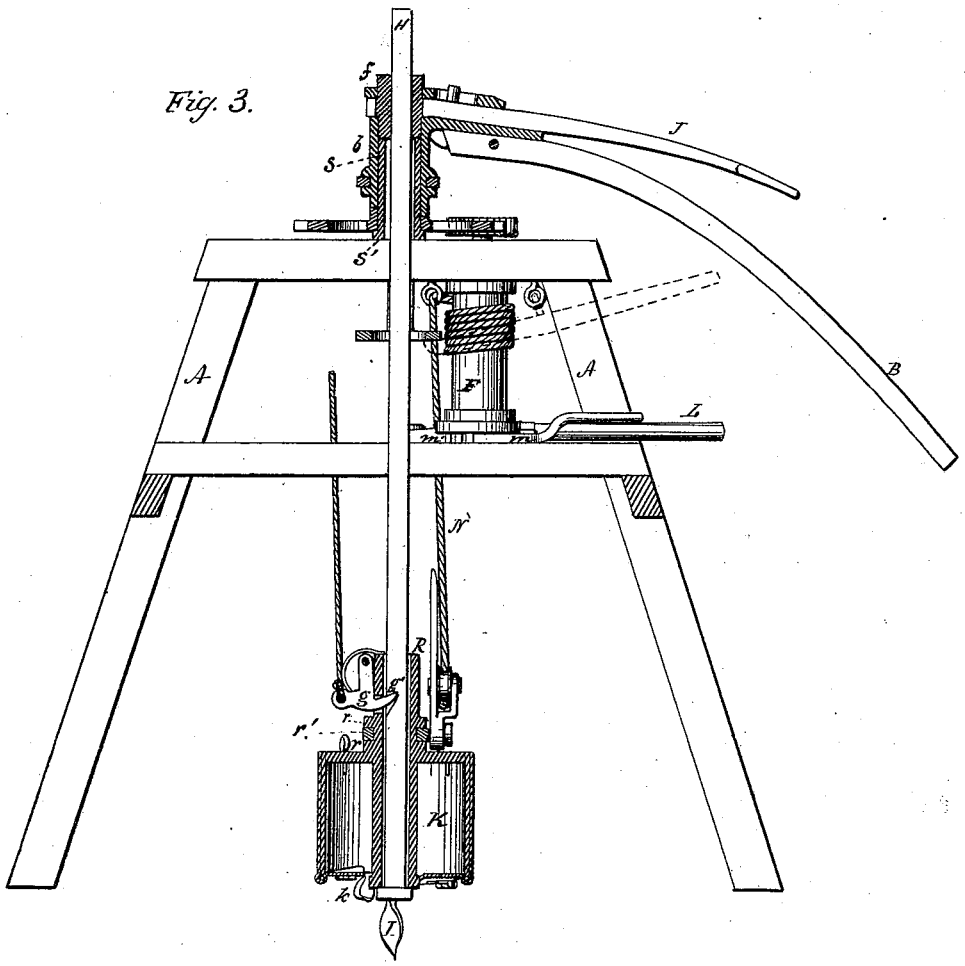
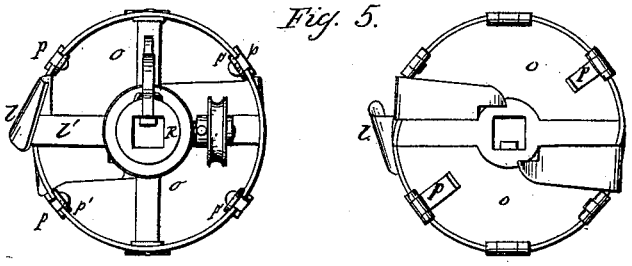



Fig. 5.

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# UNITED STATES PATENT OFFICE.

ORIN MARTIN, OF BLOOMFIELD, IOWA.

## IMPROVEMENT IN EARTH-AUGERS.

Specification forming part of Letters Patent No. **180,046**, dated July 18, 1876; application filed June 19, 1876.

*To all whom it may concern:*

Be it known that I, ORIN MARTIN, of Bloomfield, Iowa, have invented certain new and useful Improvements in Well-Augers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my invention in a position for boring. Fig. 2 is a side elevation with the bucket raised ready for discharging. Fig. 3 is a vertical section. Fig. 4 shows details of the upper gearing. Fig. 5 shows details of the boring-bucket.

My invention relates to that class of well-augers used in sinking wells where the earth has to be removed by means of alternately lowering and raising a bucket; and it consists in the several combinations of devices hereinafter explained and claimed.

To enable others skilled in the art to make and use my invention, I will proceed to describe the exact manner in which I have carried it out.

In the drawings, A A represent a derrick-frame, over and around which moves the sweep B, secured at its upper end to a loose sleeve, *b*. This sleeve is bisected by a zigzag line, as shown in Figs. 1 and 2, the lower portion *b'* being secured to the cog-wheel C, which gears with and drives the pinion E, thus revolving the drum F. The rectangular frame G, having its ends *a a* passing through slots in the upper portion of the derrick-frame, is secured to the sleeve *b* by means of the loose collar *e*, held between the shoulders *e' e''*. The sleeve *b* revolves upon a hollow stem, S, secured to the derrick by means of the plate S'. Above the sleeve *b* is secured the collar *f*, as shown in Figs. 3 and 4. This collar has a rectangular opening fitting upon the shaft H, and is slotted upon its periphery to receive the point of the sliding rod J, by which means the collar *f* may become geared with the sleeve *b* and revolve with it, thus causing the shaft to revolve, and with it the bit I and boring-bucket K.

When the frame G is raised by means of a suitable lever, or otherwise, the collar *e* raises the upper portion of the sleeve *b* from the lower portion *b'*, and the sweep being thus thrown out of gear with the cog-wheel the bucket is allowed to descend by its own weight, until the spring-pawl *g* reaches the notch *g'* in the shaft, where the bucket is caught and held until the pawl is realeased, in order to allow the bucket to be drawn up when full of earth.

The descent of the bucket is regulated by the brake L, and it is held in its raised position by the pawl *m*, catching in the ratchet-wheel *m'* on the lower extremity of the drum. The bucket is raised by means of the rope or chain N passing from the derrick through the sheaves 1 2, and around the drum F, as shown in Fig. 2.

The bucket K has two boring-lips, *k k*, attached to its bottom, and a cutting-lip, *l*, at its top for the purpose of widening the opening in the track of the bucket. The earth removed by each cutting-lip will be automatically conveyed to the bucket to be removed.

The bucket is provided with hinged doors or openings *o o* in its bottom, which are held closed by means of the hinged straps *p p*, which pass up the sides over the top edge of the bucket, where they are secured by means of the pins *p' p'*.

When it is desired to dump the earth from the bucket these pins are withdrawn, and the doors *o o* open and allow the earth to drop out.

Vertically through the center of the boring-bucket is the air-tube or short hollow cylinder R, sliding over the shaft H when the bucket is raised or lowered, and to this cylinder is secured the cutting-lip *l* by means of the cross-arm *l'*. The cylinder R is provided with two shoulders, *r r*, between which is fitted the collar *r'*, to which is attached sheave 1.

I am aware that the raising mechanism is old, and therefore do not claim it.

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

1. The bucket K, provided with the lips *k k* and *l*, in combination with the air-tube R, provided with the shoulders *r r*, collar *r'*,

shaft H, and sheave 2, substantially as and for the purpose set forth.

2. The bucket K, provided with the boring-lips *k k* and cutting-lip *l*, and having the hinged doors *o o* secured by the straps *p p* and pins *p' p'*, and the spring-pawl *g*, in combination with the notched shaft H, bisected sleeve *b*, collar *f*, rod I, and sweep B, all constructed to operate substantially in the manner and for the purpose specified.

ORIN MARTIN.

Witnesses:
H. H. SMITH,
AMOS STECKEL.