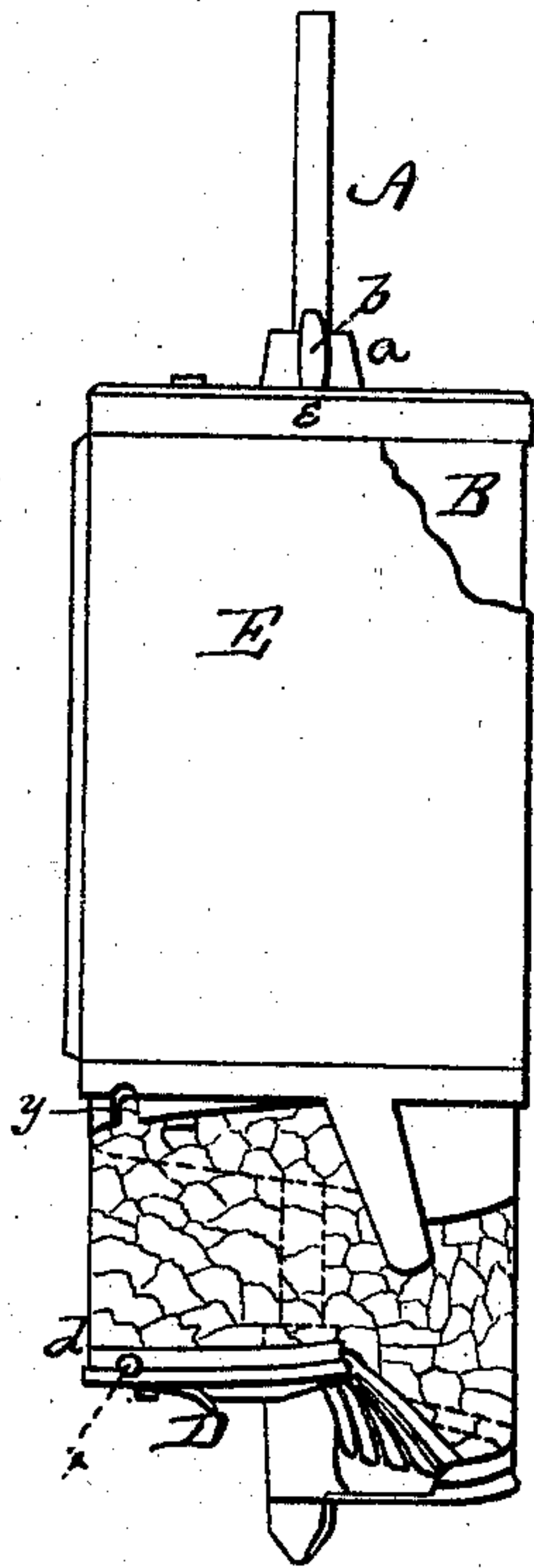


W. R. ANDREWS.  
Earth-Augers.

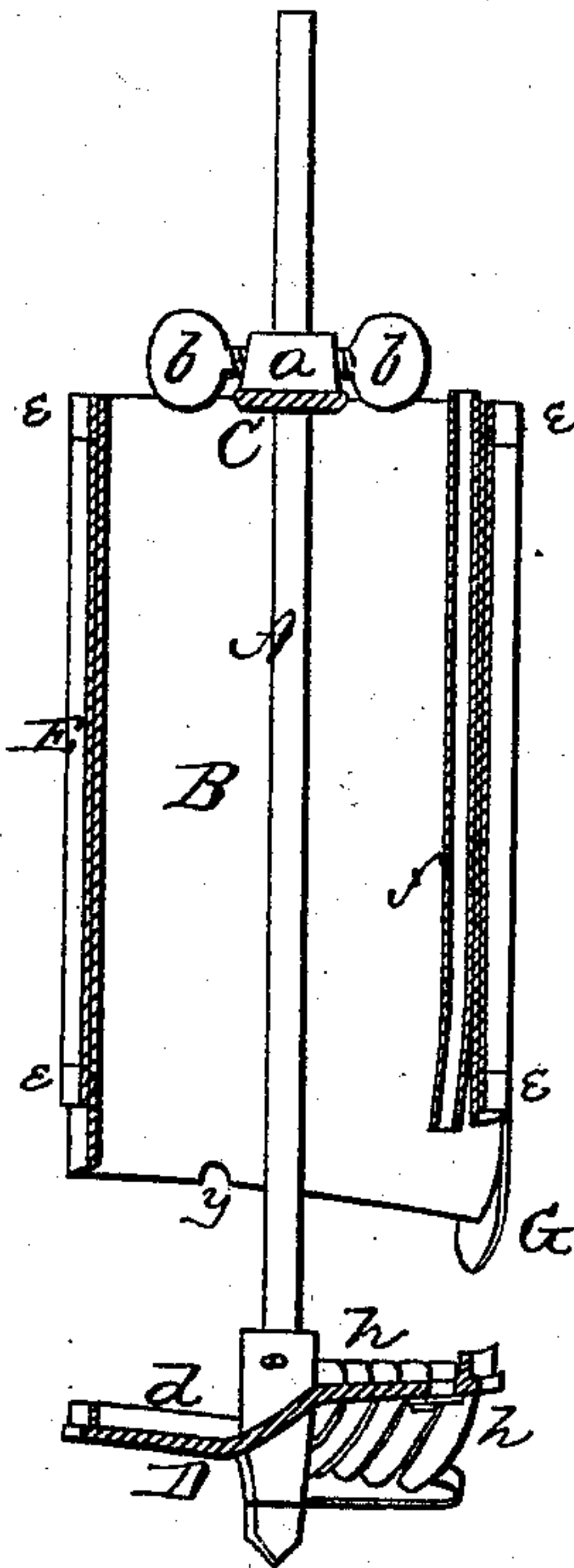
No. 150,670.

Patented May 12, 1874.

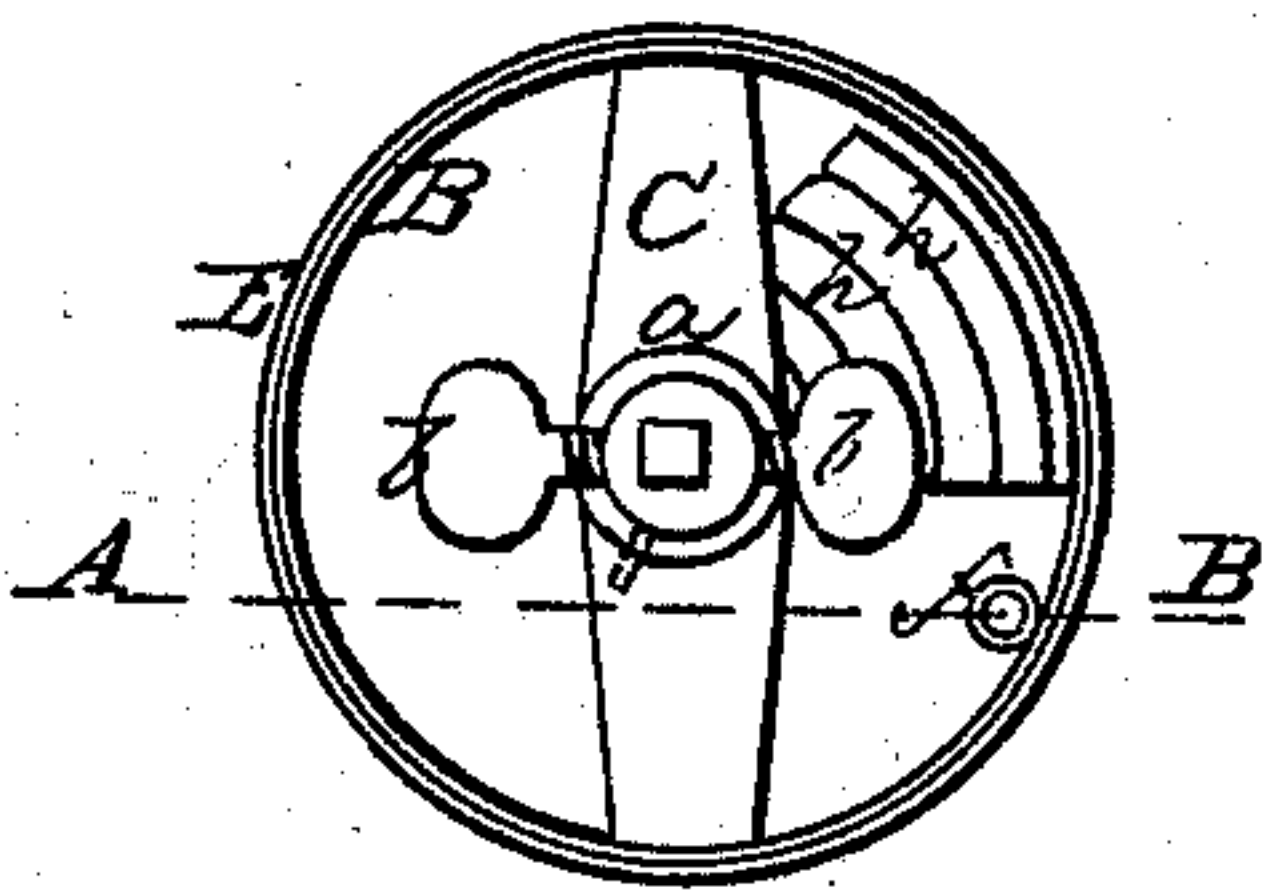
*Fig. 1.*



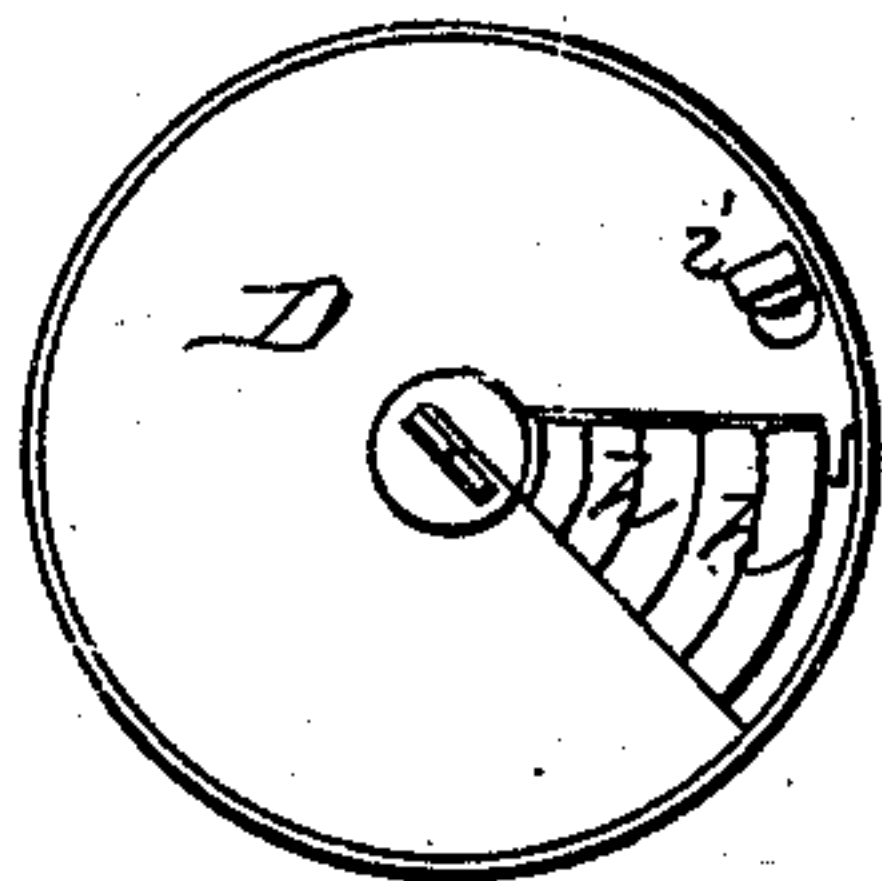
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



Witnesses,  
*L. D. Glimmer,*  
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# UNITED STATES PATENT OFFICE.

WILLIAM R. ANDREWS, OF NEWARK, NEW JERSEY.

## IMPROVEMENT IN EARTH-AUGERS.

Specification forming part of Letters Patent No. **150,670**, dated May 12, 1874; application filed March 30, 1874.

*To all whom it may concern:*

Be it known that I, WILLIAM R. ANDREWS, of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Earth-Augers; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

The nature of my invention consists in the construction and arrangement of an earth-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, and Fig. 2 a longitudinal section, of my earth-auger, showing the cylinder raised up from the bit. Fig. 3 is a plan view, and Fig. 4 a bottom view, of the same.

A represents the auger-shaft, to which the bucket or cylinder B is secured by the shaft passing through a hub, *a*, formed in the center of a cross-bar, C, attached across the upper end of the bucket, and set-screws *b b* passing through the hub and bearing against the shaft. D represents the bit, secured to the lower end of the shaft A, and provided around its edge with an upward-projecting flange, *d*, which fits within the lower end of the bucket; and upon the outside of said flange are lugs *x*, which enter notches *y* in the lower edge of the bucket to unite the bit and bucket together. Around the outside of the bucket or cylinder B, at the upper and lower ends, are flanges *e e*, between which is an exterior casing, E, surrounding the bucket. As the auger descends into the earth this casing E goes down with it, but does not revolve. The bucket or cylinder B, on the other hand, revolves within the casing E, thereby lessening the friction, and causing the auger to work easier, and less power is required to turn it.

The bit D is constructed substantially in the same manner as in earth-augers now generally in use; but, in place of the valve commonly employed, I use a series of curved fingers, *h h*, hinged side by side at their upper ends to close the aperture.

With the valve made in one piece, as heretofore constructed, the whole valve had to rise to admit even a small stone; but by the use of the fingers *h* only so much will rise as is necessary to admit the stone, thereby again reducing friction against the earth already in the auger, and also diminishing the power required to operate the auger.

On the side of the bucket or cylinder B, at the lower end, is a knife, G, attached, which extends down below the bit, to cut the sides of the well perfectly clean. *f* represents the ordinary air-tube within the bucket or cylinder B, the lower end of which tube fits into a hole in the bit D, and this hole is, on the under side of the bit, closed by a downward-opening valve, *i*. When the auger descends this valve closes the end of the air-tube, preventing any dirt from getting into the same and clogging it; but as soon as the auger has commenced its upward movement, upon being withdrawn, the air opens the valve and passes under the bucket and bit, to prevent suction, and cause the auger to be raised easily.

When the bucket B is filled and the auger raised up, the set-screws *b b* are loosened, and the bucket with its exterior casing raised or moved up on the shaft, so as to empty the earth.

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

1. The auger-bit D, provided with flange *d*, having lugs *x x*, in combination with the bucket B, having notches *y* in its lower edge, substantially as and for the purposes herein set forth.

2. The fingers *h h*, hinged to the bit D, and forming together a sectional valve, substantially as and for the purposes herein set forth.



3. The bit D, provided with a flange, *d*, and lugs *x x*, in combination with the fingers *h h*, air-tube *f*, having the valve *i* at its lower end, shaft A, and knife G, substantially as shown and described.

4. The combination of the exterior cylinder E, bucket B, having notches *y y*, cross-bar C, nut *a*, set-screws *b b*, shaft A, bit D, provided with fingers *h h*, flange *d*, and lugs *x x*,

and air-tube *i*, substantially as shown and described.

In witness that I claim the foregoing I have hereunto set my hand.

W. R. ANDREWS.

Witnesses:

JAMES ALLISON,

D. TANNAHILL.