(No Model.)

S. H. HORN.

EARTH AUGER.

No. 261,154. Patented July 18, 1882.

Fig. 1.

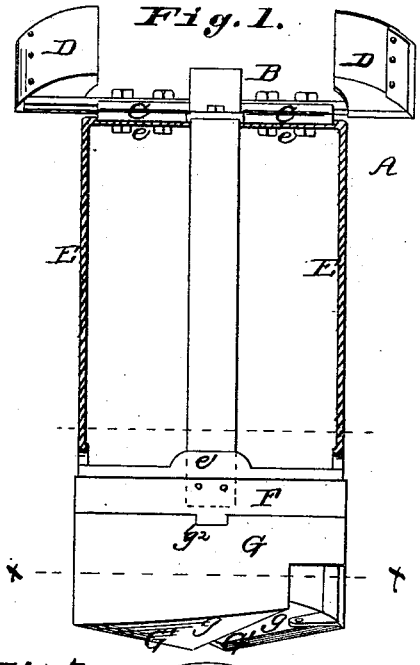


Fig. 2.

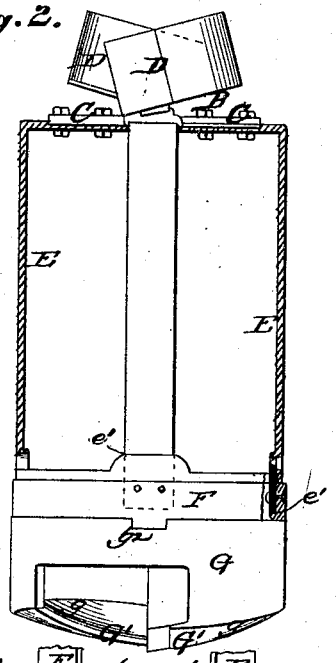


Fig. 3.

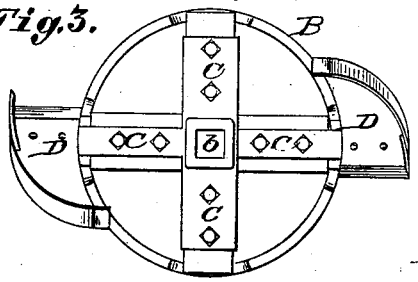


Fig. 6.

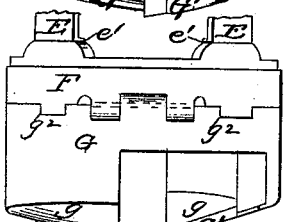


Fig. 7.

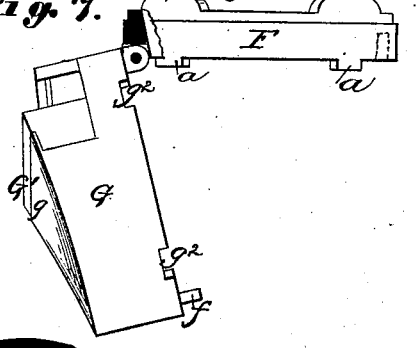


Fig. 4.

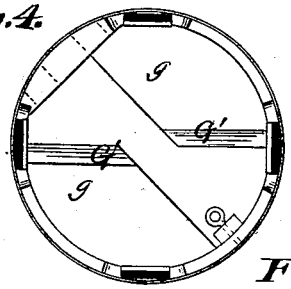
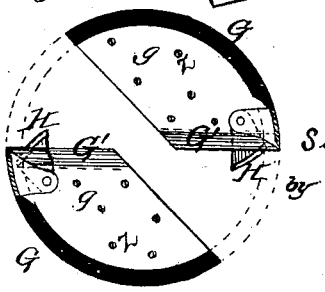


Fig. 5.



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UNITED STATES PATENT OFFICE.

SIDNEY H. HORN, OF ST. LOUIS, MISSOURI.

EARTH-AUGER.

SPECIFICATION forming part of Letters Patent No. 261,154, dated July 18, 1882.

Application filed October 19, 1881. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY H. HORN, of St. Louis, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Earth-Augers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to the construction of an earth-auger for boring Artesian wells.

The object of my invention is to provide light, strong, and durable mechanism which can be readily and easily operated in boring or sinking a well in quicksand, gravel, or earth that caves. This object I attain by means of the devices illustrated in the annexed drawings, in which—

Figures 1 and 2 are vertical sections taken through the auger on planes at right angles to each other. Fig. 3 is a top or plan view; Fig. 4, a section taken on the line *x x*, Fig. 1, with the bits detached. Fig. 5 is a like view, with the bits connected with the bit-plates. Fig. 6 is a view of one side of the lower part of the auger; and Fig. 7 shows the two rims, with the lower rim dropped down.

The letter A indicates the metal cylinder, which is adapted to inclose the auger and its several adjuncts.

The auger-head B consists of a metal casting, having a square central socket, *b*, for receiving the stock or shaft, and it will be provided with a suitable set-screw or like device for firmly securing the said two parts together.

C refers to four arms which radiate from the auger-head, and D D indicate the two large cutting-bits, the shanks of which are bolted onto the radial arms C, which latter will be formed with channels for receiving the said bit-shanks. These large top cutting-bits extend beyond the face of the cylinder, and can be adjusted laterally with respect to the same, so as to project to a greater or less extent.

The arms C are secured to the horizontal arms *e* of four vertical bars, E, these said arms *e* being extended laterally from the auger-head, and the lower ends of the bars E being seated and secured in the sockets *e'*, that are formed in an annular hinge-rim, F. By this construction and arrangement it will be seen that a strong and light skeleton frame, comprising the auger-head, the bit-holding arms, the vertical bars, with their inwardly-bent upper ends, and the annular hinge-rim, is produced.

G indicates an annular rim or bit-holder, which is hinged to the hinge-rim F, so that it can be closed against the same or dropped down, as occasion may require.

The bit-plates *g g* are cast solid with this rim G, and the steel cutting knives or bits G' are attached to the bit-plates by means of heavy countersunk bolts *z*.

To the bit-plates and bits are pivoted the two swinging cutting-lips or extension-bits H, which are arranged to extend and bore directly under the bottom of the tubing during operation, and to contract or draw in and come up inside of the tubing when the auger is being raised, thus allowing the tubing to sink as fast as the well is bored and the auger raised, the top cutters, D, being adjusted laterally in the channels in the radial arms C when necessary. The cutters D may be also entirely detached when desired.

The rim G is formed with a series of recesses, g^2, in its upper edge for receiving coincident lips *a*, projecting down from the hinge-rim F, and it is also provided with a spring lug or lip, *f*, which will engage in a suitable notch in the hinge-rim in order to hold the two rims together.

My improved earth-auger may be operated by a derrick or other suitable mechanism, driven by horse, steam, or other power.

By reference to the above description and the annexed drawings, the operation and advantages of my invention will be readily understood. It is simple, convenient, durable, and efficient.

What I claim is—

1. The combination, with the auger-head, of the vertical bars E, bent inwardly at their upper ends, and secured at their lower ends to the rim or ring F, carrying the hinged cutting-bottom, substantially as set forth.

2. The rim F, adapted to carry the cutting-bottom by a hinged joint, and provided with sockets for the bars E, substantially as specified.

3. As an improvement in earth-augers, the combination, with the lower rim, F, having the downwardly-projecting lips *a*, of the cutting-bottom G, hinged to said rim, and provided with a series of recesses, g^2, and a spring lug or lip, *f*, the former to receive the lips *a*, and the latter to engage a notch in the rim F to hold the bottom and rim securely together, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

SIDNEY HEARTWELL HORN.

Witnesses:
SIM. T. PRICE,
A. H. FULTON.