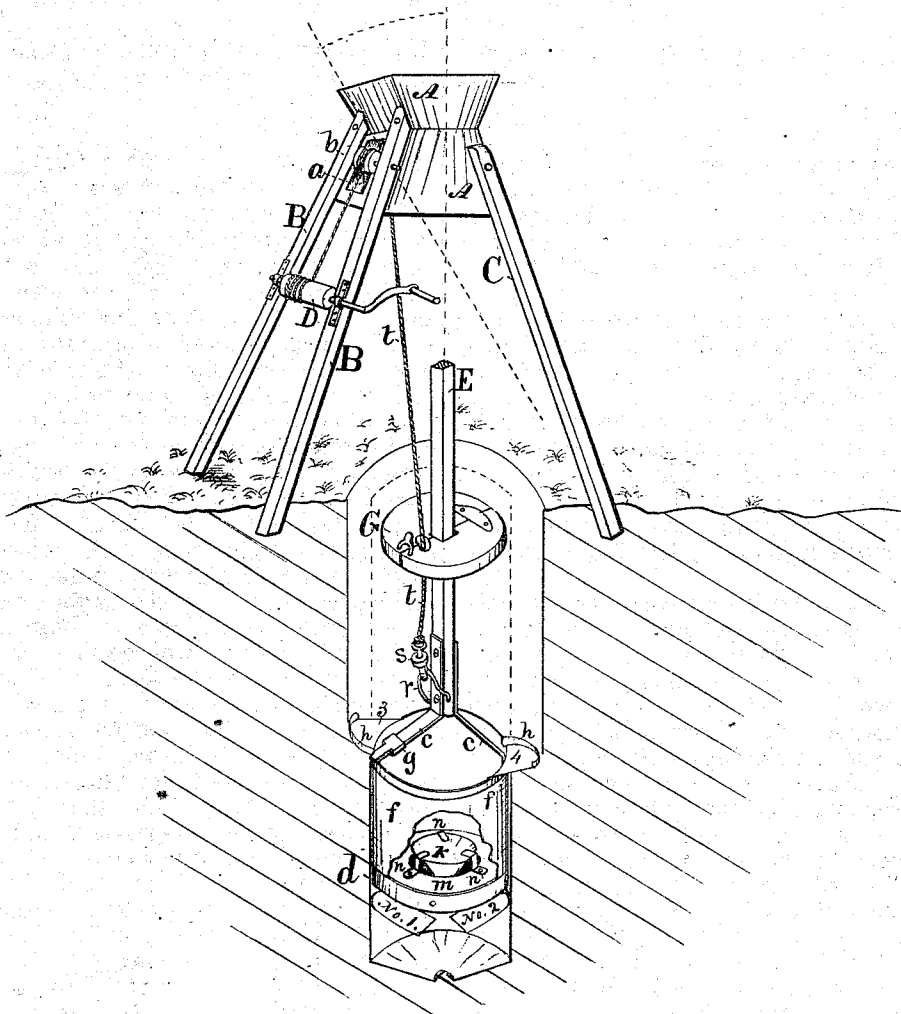


J. R. DAVIS & J. R. MILLS.
Earth-Augers.

No. 158,919.

Patented Jan. 19, 1875.



Witnesses,
R. H. Orrig.
J. R. March.

Inventors, { John R. Davis,
James R. Mills,
Attorney, Thomas G. Orrig.

UNITED STATES PATENT OFFICE.

JOHN R. DAVIS AND JAMES R. MILLS, OF BLOOMFIELD, IOWA.

IMPROVEMENT IN EARTH-AUGERS.

Specification forming part of Letters Patent No. **158,919**, dated January 19, 1875; application filed November 19, 1874.

To all whom it may concern:

Be it known that we, JOHN ROLPH DAVIS and JAMES ROSS MILLS, of Bloomfield, in the county of Davis and State of Iowa, have invented an Improved Well-Auger, of which the following is a specification:

Our invention consists in forming a derrick in such a manner as to allow the auger-shaft to assume an angling position, to discharge the bucket without uncoupling, and an auger with a valve and cutters of peculiar form, and specially adapted for operating in quicksands, and for enlarging a bore previously made, all as hereinafter fully set forth.

Our drawing is a perspective view, illustrating the construction and operation of our invention.

A A is a tubular crown-piece, flaring outward and upward and downward from its central portion. It may be cornered or circular, and cast complete in one piece, or formed in parts, of wood or metal, and joined together in any suitable way. It serves as a hub for attaching and connecting radial legs to form a derrick, and also as a kind of vertical pillow-block, for supporting and guiding the auger-shaft. B B are legs, bolted or otherwise rigidly attached to the outside of the crown A, so that they will stand at angles corresponding with its flaring sides, and be spread below to form a wide base. C C are legs on the opposite side of the crown, and pivoted thereto in such a manner that they will fold to or from the legs B, to be used, like the pry-pole of a tripod, in raising the derrick and fixing its base. *a* is a vertical slot in the side of the crown A. *b* is a pulley set in the slot *a*, and has its bearings in the legs B at the sides of the slot. D represents a windlass, mounted upon the legs B. It may be operated with a crank and geared wheels, or in any suitable way. E is the auger-shaft. It may have a suitable attachment at its top to be rotated by hand, or by any mechanism and power that can be applied. G is a wallower, composed of two rigid semicircular blocks, hinged together in such a manner that they can be closed upon each other and clasped to the shaft E, and ro-

tate therewith. One or more of them may be used on the shaft to bear against the wall of the bore, to guide and steady the shaft and its auger when in operation. *cc* are bent bars, bolted at their top ends to the lower end of the shaft E, and at their bottom ends to the ring *d*. Nos. 1 and 2 are movable cutters, of peculiar form, secured with screw-bolts and nuts to the base-ring *d*. Their novelty consists in being curved upward and inward at their upper and outside ends, for the purpose of directing the ground or sand, which they move, toward the center of the bucket or cylinder and its valve. *ff* is a movable bucket, formed by riveting the top of a sheet-metal cylinder to a rigid ring. It is passed downward over the shaft and the auger-frame *ccd*, and locked thereto by the catch *g* sliding on one of the bars *c*. Nos. 3 and 4 are movable cutters, of peculiar form, secured to the top edge or rim of the bucket *ff*. They stand outward and angle upward, and have vertical flanges *h* around their rear and curved edges, to prevent loose dirt from falling off on the rear side. They incline forward and in twisted positions, relative to each other, to increase the diameter of the bore made by cutters Nos. 1 and 2, and throw the ground they cut loose into the bucket *ff*. *m* is a movable bottom in the bucket, resting upon the base-ring *d*. It has a circular opening in its center, to allow the dirt to pass upward into the bucket. *k* is a loose valve, of inverted-cone form, with its point projecting down through the bottom *m*. It is kept in position and restricted in its movements by the clasps *n*, which are riveted to the bottom *m*. In lifting the bucket the valve closes, and prevents the escape of the sand. *r* is a link, secured to the bottom of the shaft E. *s* is a swivel, connected with the link. *tt* is a rope or chain, connected with the swivel, and passed up through the wallower G and over the pulley *b*, to connect with the windlass D. Broken lines indicate how the auger-shaft E may pass up through the derrick-crown A when the auger is lifted by winding the chain *t* upon the windlass D, and then placed in an angling position, to allow

the bucket or auger-cylinder to be taken from the mouth of the bore or well and discharged without uncoupling the shaft.

The foregoing details of the functions of the various operative parts fully illustrate the practical operation and advantages of our invention.

We claim as our invention—

1. The tubular and flaring derrick-crown A, substantially as described, and for the purposes specified.

2. The combination of the crown A, rigid legs B B, and folding legs C C, substantially as described, and for the purposes specified.

3. The cutters Nos. 1 and 2, having the peculiar upward and inward curves at their upper and outside ends, as described, in combination with the valve *k*, substantially as shown and described, for the purpose of elevating the loose dirt.

4. The movable bottom *m*, having conical valve *k*, substantially as and for the purposes specified.

5. The movable cylinder or bucket *ff*, in combination with the frame *c c d* and sliding catch *g*, substantially as and for the purposes specified.

6. In a well-auger, the combination of the frame *c c d* carrying cutters Nos. 1 and 2, the movable cylinder *ff* carrying cutters Nos. 3 and 4, and the movable bottom *m* having valve *k*, substantially as described, and for the purposes specified.

JOHN ROLPH DAVIS.
JAMES ROSS MILLS.

Witnesses:

J. B. WEAVER,
S. W. LAKIN.