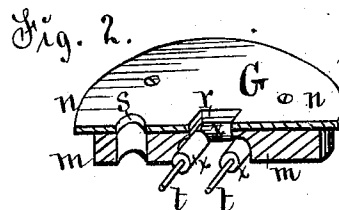
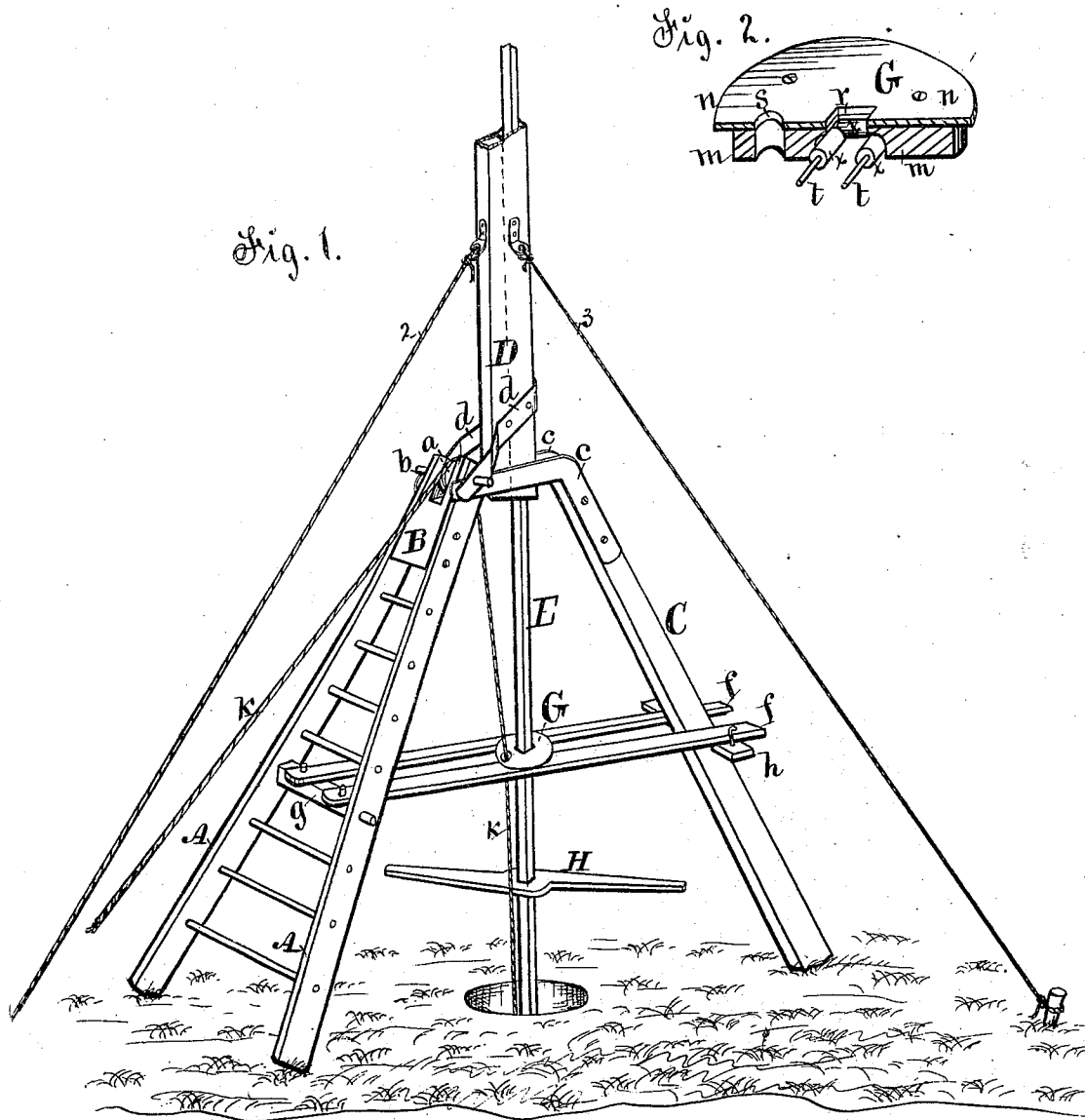


J. R. DAVIS & J. R. MILLS.
EARTH-BORING APPARATUS.

No. 170,437.

Patented Nov. 30, 1875.



Witnesses.
C. A. Johnson
Arthur Wright.

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UNITED STATES PATENT OFFICE

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

IMPROVEMENT IN EARTH-BORING APPARATUS.

Specification forming part of Letters Patent No. **170,437**, dated November 30, 1875; application filed May 6, 1875.

To all whom it may concern:

Be it known that we, JOHN R. DAVIS and JAMES R. MILLS, of Bloomfield, in the county of Davis and State of Iowa, have invented a Folding Derrick for operating Well-Augers, of which the following is a specification:

The object of our invention is to facilitate the operations of well-boring, and thereby economize time and labor. It consists, first, in a folding derrick having shaft supports and guides for raising and lowering the auger or bucket without uncoupling the shaft; second, in the manner of forming and mounting a rotating shaft, collar, and guide, all as herein-after fully set forth.

Figure 1 of our drawing is a perspective view, illustrating the construction and operation of our invention.

A A represent the main portion of our derrick, in the form of a ladder spread at its base and made solid at its apex by the insertion of a pulley-block, B. *a* is a pulley in a slot in the block B, mounted upon the shaft *d*, extending horizontally through the apex of the ladder A A and the block B. C is a post hinged to the shaft *b*, in the apex of the ladder, by means of elbow-form plates *c c* rigidly attached to the top end of the post. D is a tubular shaft-guide and support, divided longitudinally into two or more compartments, through which the auger-shaft E passes. It is hinged to the shaft *b*, in the apex of the ladder, by means of the bent plate or plates *d d* rigidly attached to the lower end of the shaft-guide D. 1 2 3 represent guys or stay-ropes attached to suitable ears on the guide D to keep it in a perpendicular position. By means of this double-barreled tube D, long shafts, formed by coupled sections, may be used to sink deep wells, and the trouble and delay of frequent coupling and uncoupling thereby avoided. When one long shaft has been sunk in a well, and while its top end remains in one of the barrels of the tube D, a second long stretch of shafting may be let into the well, and its top end then passed up through the empty barrel of the tube D, and by uncoupling and removing the top section of the first long shaft from the rotating guide G the lower end of the second long shaft can be inserted in the guide G and coupled with the long shaft and its auger in

the well, and thus a deep well can be bored by once coupling two long stretches of shafting. *ff* are parallel horizontal bars pivoted to a shaft, *g*, which has its bearings in the side bars of the ladder A A. Their free ends rest on a bar, *h*, rigidly attached to the post C. G is a rotating shaft collar or guide, supported upon the bars *ff*.

Fig. 2 is a perspective view of a half-section of our rotating shaft-guide G, and illustrates the manner of its construction. *m m* is a semi-circular wooden or iron block. *nn* is a semi-circular plate rigidly secured to the top surface of the block *m* in such a manner that it will form a flange around the curved side. *r* is a square mortise through the center of the complete collar G. *s* is a hole through the side of the collar for the passage of the rope *k*. *tt* are dowel-pins extending at right angles from the block *m* in such position relative to the mortise *r* that they will hold anti-friction rollers *xx* in proper position to facilitate the passage of the shaft E through the collar and guide G. The parts *m* and *n* may be cast solid, or turned complete in one piece from a solid block of wood. A corresponding section will be connected and retained by the dowel-pins to form the complete rotating guide G, which, being divisible, can be readily taken apart and put on and off the shaft E, as required. Curved cavities in the insides of the adjustable parallel bars *ff* form bearings in which the collar G can be readily placed and supported, to guide the shaft E while rising or descending, and to aid in holding it steady and perpendicular while it is operated, by means of the horizontal beam or lever H represented in Fig. 1.

The form of our folding derrick enables us to set it up readily anywhere for practical use, and to take it down and fold it compactly for transportation. The double-barreled tubular guide D enables us to sink a bore fifty feet without uncoupling the shaft, and to add fifty additional feet of shafting to sink a bore one hundred feet. By passing the additional fifty feet of shaft up through the empty barrel of the guide D, and removing the top section of the shaft in the well from the collar G, and inserting the lower section of the additional shaft in its place, the two lengths are readily

connected to sink the wells, by uncoupling and coupling the shaft only one time.

We claim as our invention—

1. The folding derrick for well-augers, composed of ladder-form part *A A*, carrying the adjustable parallel bars *ff* on the shaft *g*, and the post *C*, carrying the bar *h*, and hinged to the apex of the part *A A* by means of the elbow-form plates *cc*, substantially as and for the purposes shown and described.

2. The tubular double-barreled shaft-guide *D*, in combination with a derrick for well-

augers, substantially as and for the purposes shown and described.

3. The sectional and divisible rotating collar and shaft-guide *G*, having dowel-pins *tt*, carrying anti-friction rollers *xx*, substantially as and for the purposes shown and described.

JOHN ROLPH DAVIS.
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Witnesses:

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