J. A. KING.

Well Boring-Machines.

No. 135,129. Patented Jan. 21, 1873.

Fig. 3.

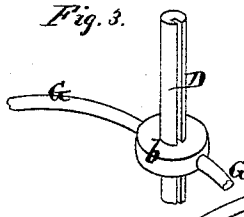

Fig. 1.

Fig. 2.

Fig. 4.

Witnesses:

Henry N. Miller

C. L. Everett

Inventor.

J. A. King

per

Alexander Mueller

Attorneys.

UNITED STATES PATENT OFFICE.

JOHN A. KING, OF HAMBURG, IOWA.

IMPROVEMENT IN WELL-BORING MACHINES.

Specification forming part of Letters Patent No. **135,129**, dated January 21, 1873.

To all whom it may concern:

Be it known that I, JOHN A. KING, of Hamburg, in the county of Fremont and in the State of Iowa, have invented certain new and useful Improvements in Well-Boring Machine; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists in the construction and arrangement of a well-boring machine, 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, in which—

Figure 1 is a side elevation of my entire machine. Fig. 2 is a view of a part of the elevator. Fig. 3 is a perspective view of a part of the screw-shaft with the lever for turning the same. Fig. 4 is an enlarged section of the chain with buckets.

A represents a square frame, of any suitable dimensions, provided with two upright standards, B B, connected at their upper ends by an iron cap, C, having an opening in the center. These standards and cap are braced by rods E E running one to each corner of the frame A, and provided with swivels so as to tighten or loosen the same at pleasure. D represents the upright screw-shaft passing through the center of the cap C and through a nut, *a*, placed in the opening of said cap. This nut is made in two parts, hinged together at one side, so that it may be opened when desired to raise the screw with the mechanism connected therewith. The screw D is provided with a longitudinal groove, as shown in Fig. 3, in which is fitted a feather in a collar, *b*, formed in the center of the lever G, and placed upon the screw. This allows the screw to be turned by said lever and yet move up and down without raising or lowering the lever. The screw-shaft D, below its screw-threads, passes through a carriage or gate, J, upon the ends of which are suitable projections to fit in corresponding vertical grooves on the inner sides of the standards B B, so as to hold said carriage or gate steady in its movement up and down. Upon the screw-shaft D, immediately above and below the carriage, are suitable collars to cause the same to move up and down with the screw, but at the same time allow the screw to turn in the carriage. The carriage is lowered by the operation of the lever G on the screw D, and, when desired, it is raised, after opening the nut *a*, by a windlass, H, which, through a belt, *d*, connects with and turns a shaft, I, located in suitable bearing alongside of the top cap C. This shaft is, by chains *e e* or ropes, connected with the carriage G, so that by turning the windlass H the carriage, screw, and all the mechanism connected with or attached to them will be raised to the desired height. On the screw-shaft D, a suitable distance above the carriage J, is secured a wheel, K, having cogs on its under side, which mesh into a bevel-gear wheel, *f*, arranged in suitable supports on the carriage J. This bevel-gear meshes into and drives a pinion, *h*, upon a horizontal shaft, *k*, which carries a flanged pulley, L, provided with bars or arms *i i* to catch in the elevator-chain and drive the same. This elevator-chain is composed of links *m m*, connected by rods *n n*, which pivot the sections together, and provided with buckets *p p*, which swing upon said rods *n n* by means of wires *r r*, and between said wires, on the rods, are tubes or rollers to lessen the friction as the chain passes over the pulleys. The elevator passes perpendicularly up over the pulley L and then over pulleys M M, arranged as shown in Fig. 2, whereby the dirt is carried to the outside of the well, and is then brought back to a perpendicular by passing around an open pulley, N, at or near the lower end of the screw-shaft. At the outer end of the frame that supports the pulleys M M is a spring, *s*, against which the scoops or buckets *p p* strike to jar the dirt out as they swing themselves bottom side up. Near the lower end of the shaft D is a collar, *t*, from which extend two arms, O O, upon one of which the pulley N is placed. The upper ends of these arms support a cylinder, P, of the size of the well to be bored, the outer ends of the arms projecting beyond said cylinder and forming knives *v v*, for the purpose of cut-

ting a groove in the dirt-wall of the well to keep the elevators and pulley from turning around with the shaft. Above the cylinder P, and placed loosely on the screw-shaft, are cross-arms, or a single arm, R, the ends of which form similar knives, to follow in the grooves made by the lower knives, to steady the shafting in the middle. Upon the lower end of the screw-shaft D is secured an auger-funnel, S, in cone-shape, with knives *w w* set in and mold-board knives S S bolted to the outside edge, so as to turn the dirt to the center of the auger. This auger revolves in a direction opposite to that of the elevator so as to revolve the dirt to the elevator.

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

1. The arrangement of the frame A, standards B B, cap C, and swivel-braces E E, substantially as shown and described.

2. The arms O O, with cylinder P and knives *v v*, constructed and operating substantially as and for the purposes herein set forth.

3. The combination of the grooved screw-shaft D, having the collar *b* and lever G, and passing through the bisected nut *a*, with the cylinder P, arms O O, knives *v v*, and a well-auger, all constructed to operate substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 26th day of March, 1872.

J. A. KING.

Witnesses:
R. N. BUCKHAM,
J. W. DALBEY.