R. H. METZKER.

Well-Boring Machine.

No. 168,099. Patented Sept. 28, 1875.

Fig. 1.

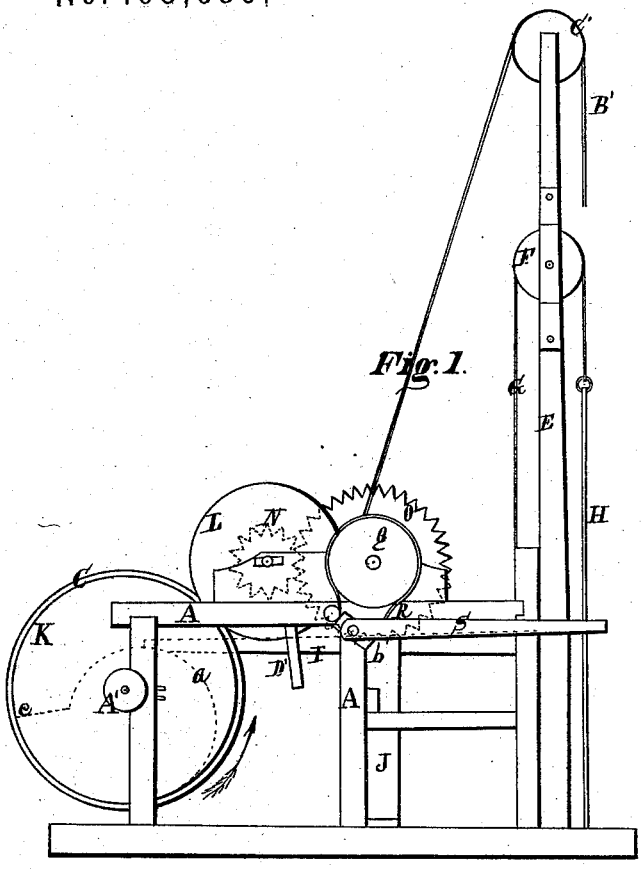


Fig. 2.

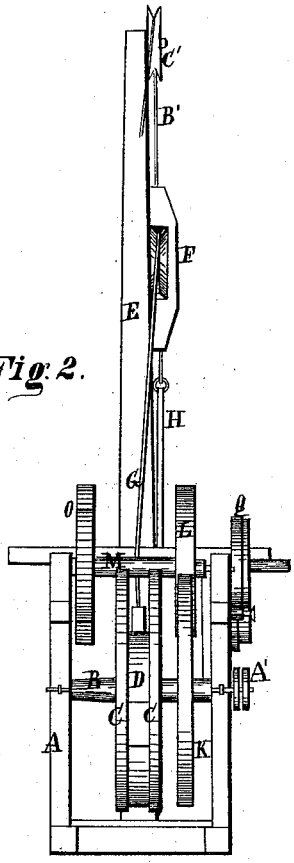
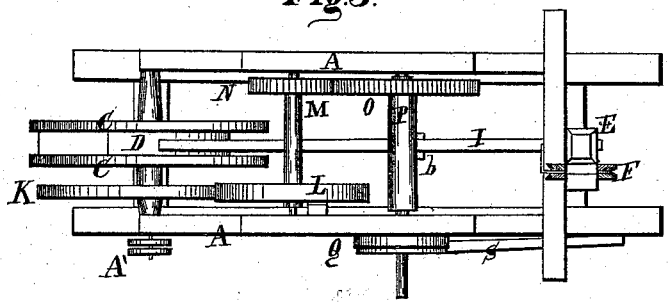


Fig. 3.



Witnesses.

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REUBEN H. METZKER, OF GENOA, OHIO.

IMPROVEMENT IN WELL-BORING MACHINES.

Specification forming part of Letters Patent No. **168,099**, dated September 28, 1875; application filed November 28, 1874.

To all whom it may concern:

Be it known that I, R. H. METZKER, of Genoa, in the county of Ottawa and State of Ohio, have invented new and useful Improvements in Well-Boring Machines, of which the following is a full and complete description, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 is a side elevation. Fig. 2 is an end view. Fig. 3 is a plan view.

Like letters of reference refer to like parts in the several views.

This invention is an improvement in a machine for working a drill for boring wells, as hereinafter described, and set forth by the claim.

In the drawing, A represents a frame, in the rear end of which is journaled a shaft, B, whereon is secured a pair of cheeks, C C, Fig. 2, between which is a cam, D, also indicated by the dotted lines *a* in Fig. 1. On the opposite end of the frame is raised a standard, E, near the upper end of which is a sheave, F, over which runs a rope, G. To one end of the rope is secured the drill H. The opposite end of the rope is attached to one end of a vibrating lever, I, Fig. 3, having its fulcrum at *b*, in the post J of the frame. The opposite end of the lever reaches back to the cam D, upon which it rests, as shown in Fig. 3, and whereby the lever is vibrated for working the drill. On the shaft carrying the cam and cheeks is secured a wheel, K, on the periphery of which runs a wheel, L, carried by the shaft M. On said shaft is a pinion, N, Fig. 3, made to engage the cog-wheel O on the shaft P. On the outer end of the shaft P is a brake, consisting of the wheel Q, around which is a band, R. One end of the band is secured to the frame A; the other is made fast to a lever or handle, S, whereby it is drawn tight around the wheel for checking its movement. The above-described gearing-wheel L and brake, with their respective shafts, comprise a windlass, the use of which will presently be shown.

The operation of the above-described machine is as follows: The position of the machine while in operation is as shown in Fig. 3. Power is applied to the cam by a belt on the pulley A′, thereby revolving said cam in direction of the arrow. As the cam revolves, the full side thereof will push upward the end of the lever I resting thereon, at the same time depressing the lower end, consequently lifting upward the drill by the pulling down of the rope to which it is attached. Now, when the shoulder *c*, Fig. 1, of the cam comes around to the end of the lever, the end of the lever drops therefrom to the shorter radius of the cam, thereby allowing the drill to fall suddenly, striking the bottom of the bore or well, and thus cut its way down. The drill is again lifted by the full side of the cam pushing upward the lever, which again drops from the shoulder *c*, and the drill falls, as before; and so on the drill is alternately lifted and dropped by the movement of the cam.

To withdraw the drill from the bore is the purpose of the windlass above described. To this end the drill is detached from the rope G and attached to the rope B′, passing over the pulley C′, thence to the shaft or drum of the wheel O, around which it is wound, either by hand or by forcing the wheel L, by means of the lever D′, upon the face of the wheel K, which, by the frictional reaction upon each other, will operate the windlass and wind up the rope, thereby withdrawing the drill from the well. The drill is again lowered into the well by the same rope, its unwinding for that purpose being controlled by the brake above described.

What I claim as my invention, and desire to secure by Letters Patent, is—

In a well-boring machine, the combination of the cam D, lever or walking beam I, rope G, sheave F, standard E, and drill H, with a windlass, consisting of the pinion N, cog-wheel O, shafts M P, and brake, comprising a wheel, Q, band R, and lever S, all as herein-before set forth.

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Witnesses:

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