G. W. Weeks,

Boring Artesian Wells.

No. 48,004. Patented May 30, 1865.

Fig. 6

Fig. 7

Fig. 3

Fig. 4

Fig. 5

Fig. 8

Fig. 2

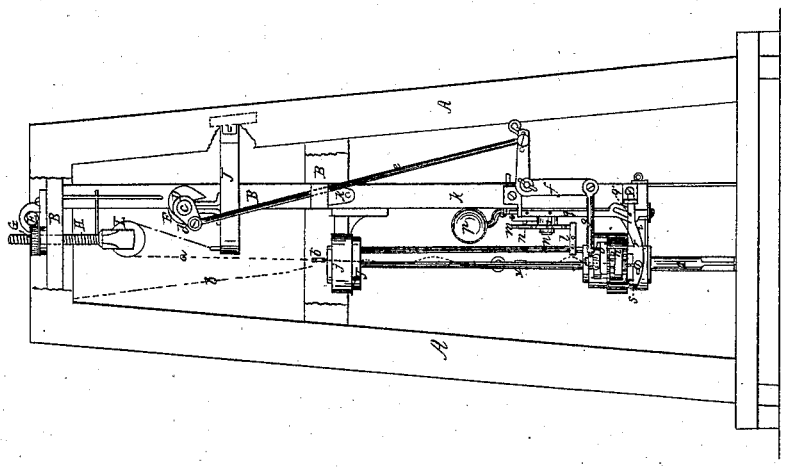
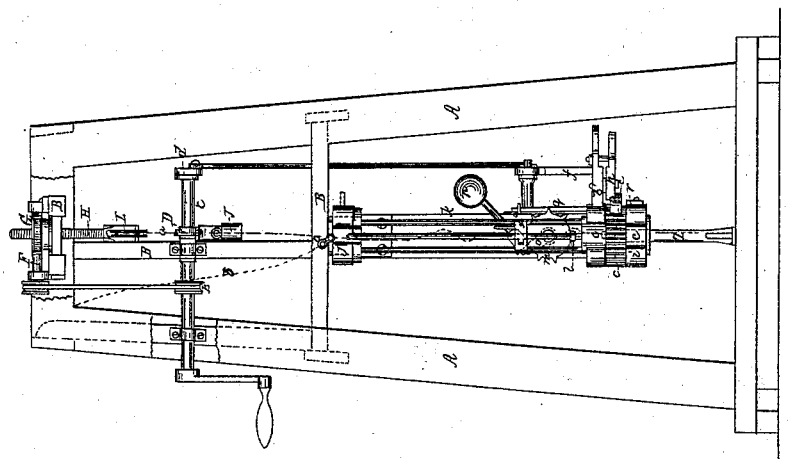


Fig. 1



Witnesses:
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UNITED STATES PATENT OFFICE.

GEO. WASHINGTON WICKS, OF NEW YORK, N. Y.

IMPROVED BORING-MACHINE FOR ARTESIAN WELLS.

Specification forming part of Letters Patent No. **48,004**, dated May 30, 1865.

To all whom it may concern:

Be it known that I, GEORGE WASHINGTON WICKS, of the city, county, and State of New York, have invented a new and Improved Machine for Boring Artesian and other Wells; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, and the letters of reference marked thereon, in which the same letter represents the same thing in each figure.

Figure 1 is a front view of my machine; Fig. 2, a side view thereof; Fig. 3, a top view of the worm shaft and gear; Fig. 4, a top view of the upper bearing; Fig. 5, a top view of the lower bearing and ratchets; Figs. 6 and 7, side elevations of the drill; Fig. 8, a view of the cutting end of the drill.

The nature of my invention consists in such an arrangement of the operative parts of drilling machinery that a drill shall retrace its cuttings and cut a circular vertical hole, and that all the machinery may be drawn out of line of the drill without disturbing it. The machinery is supported by a suitable frame, A, within which is a secondary frame, B, to sustain the driving-shaft C and tripping-cam or wiper D. Shaft C has a pulley, E, communicating to worm-shaft F, which shaft plays into worm-gear G, which is attached to a vertical rod, H, the lower end being bifurcated to sustain pulley L, over which main rope *a* passes, one end of the same being attached to the tripping-lever J and the other to drill Z. An auxiliary rope, *b*, is connected with the main rope by a sliding ring or clutch-fastening, *b'*, to feed the main rope as the drill descends.

H is a screw-rod, operating in connection with main rope *a*, for adjusting the motion of tripping-lever J. Shaft C communicates motion to spur-gear *c* by means of crank *d* on its inner end, connecting-rod *e*, rectangular rocking lever *f*, and rod *g*, connecting lever *b* and pawl *h*, which operate gear *c*. Gear *c* and its connections are sustained in bearings *i j*, projecting from post *k*, hinged at *k'* to secondary frame B, to swing the machine when necessary. The lower bearing, *i*, sustains spur-gear *c* by embracing its lower hub, while from its upper hub three rods extend upward to a crescent-shaped ring, J, embraced by upper bearing, *j*, of post *k*. Ring J and spur-gear *c* are crescent-shaped, and the gear has a movable section, *c'*, to complete its periphery. By removing the section the machinery may be drawn out of line of the drill without disturbing the same. On one of the rods is fixed tripper *l*, which operates sprocket-wheel *m*, on the inner face of which are two pins, *n n'*, which, by means of pitman *o* and weighted lever *p*, (bifurcated at its lower end,) operate vertical slide-bar *g*, which is sustained in bearings attached to swing-post *k*, and is slotted at its lower end to receive a pin, *q'*, projecting from horizontal bar *r*, also slotted, and having a rectangular recess, *s*, on its outer end, which operates pawl *h* by means of a projecting pin on the pawl playing into the rectangular recess.

It will be seen from the above description that the connections or parts between tripper *l* and pawl *h* are employed for the purpose of reversing the motion of spur-gear *c* and its rods or frame-work; also to reverse the circular or cutting motions of the drill by means of the slide-piece *x*, inserted between the rods, which piece embraces the main drill-rope. The main rope is attached to drill Z, which is triangular at its cutting end, and has three cutters running from the center to each corner, the object being to cut a circular vertical hole, while a chiseled-shaped drill is likely to cut a flat and oblique hole. The main rope is secured in slide-piece *x*, and the result of the constant reversals of spur-gear *c* is to twist the rope back and forth between the drill and slide-piece *x*, thereby enabling the drill to retrace its cuttings, which is a great advantage over drills as heretofore operated by machinery.

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

1. The apparatus described, when constructed substantially as shown, for imparting to the drill the alternate vertical rotary motions, as explained.

2. Spur-gear *c*, with its rods or frame-work, and the slide-piece *x*, in combination with the tripper D and drill Z, operating together, substantially in the manner and for the purpose described.

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