

N. Pontious,
Walking Beam for Well Drills.
N^o 63,557. Patented Apr. 2, 1867.

Fig 2.

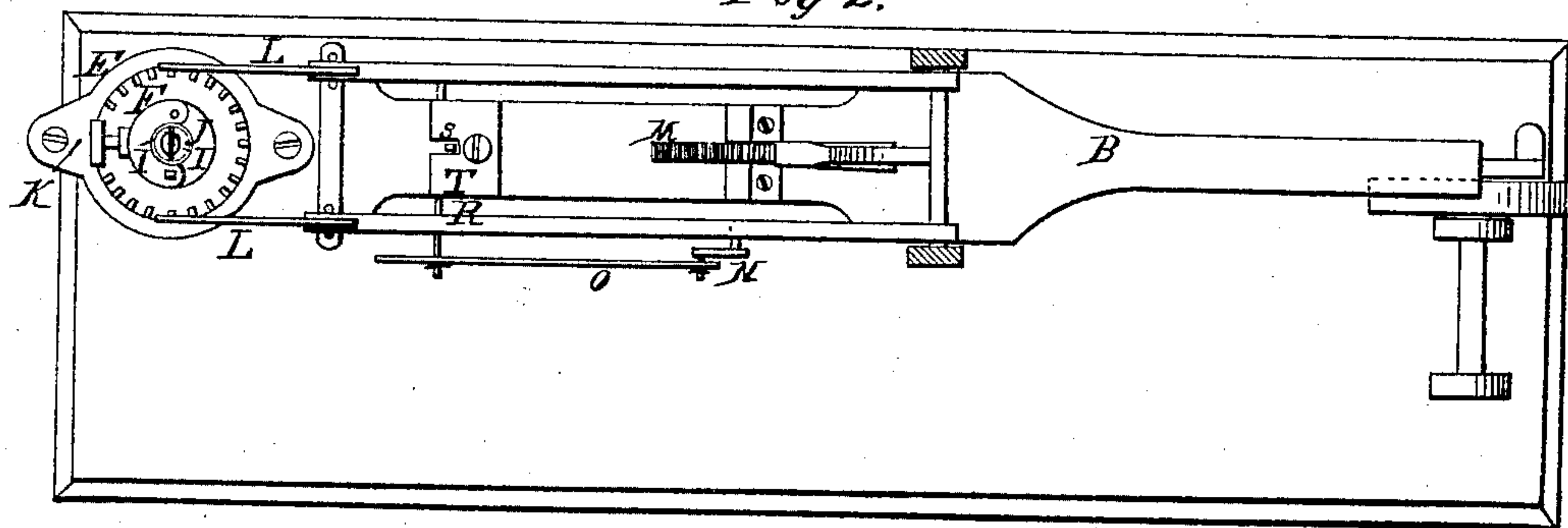
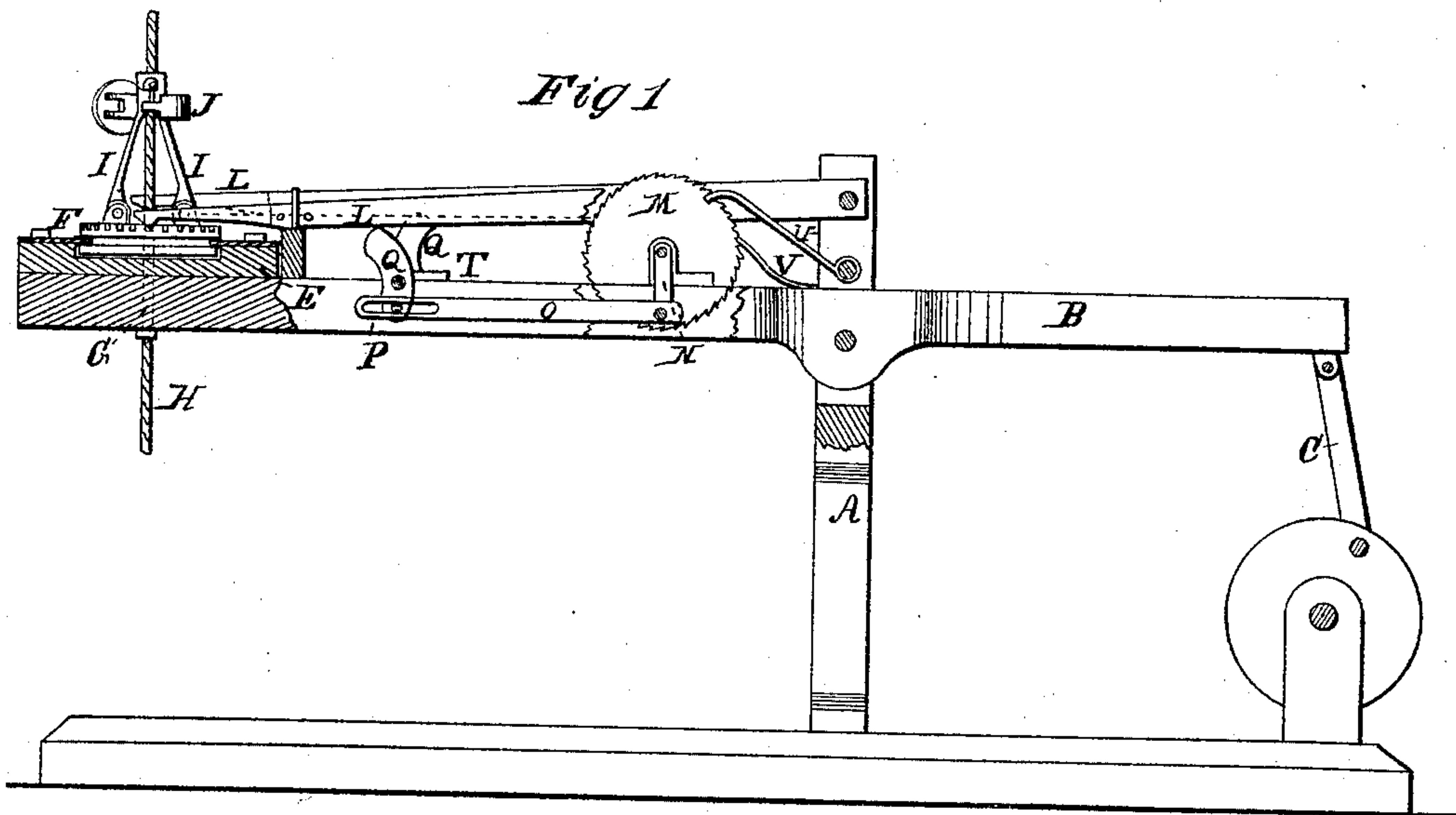


Fig 1



Witnesses.
Alex F. Roberts
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N. Pontious
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United States Patent Office.

NELSON PONTIOUS, OF HALLSVILLE, OHIO.

Letters Patent No. 63,557, dated April 2, 1867.

IMPROVEMENT IN DRILLING OIL AND OTHER WELLS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, NELSON PONTIOUS, of Hallsville, Ross county, State of Ohio, have invented a new and useful Improvement in Machines for Drilling Oil and other Deep Wells; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of a machine made according to my invention.

Figure 2 is a plan or top view.

Similar letters of reference indicate like parts.

The object of this invention is to provide means for automatically turning drilling tools in the bore of an oil or other artesian well, and also to reverse the direction of rotation by automatic action through the vibration of the walking-beam.

The letter A designates the ordinary Samson post supporting the walking-beam B, which is connected to the driving-shaft by a pitman, C. These parts may be made in the ordinary way, and are shown here in order that I may more clearly explain the construction and operation of my invention. On the end of the walking-beam, and under the derrick sheave, (not shown,) I attach and secure to the walking-beam, by means of bolts, a bed-plate, E, in which I fix a ratchet-wheel, F, in a horizontal position. Said ratchet-wheel is made with a central orifice, G, which also extends through the bed-plate and walking-beam, and through which the drill-rope H is passed. The ratchet teeth consist of radial incisions made in its rim about its whole circumference, said incisions in this example being in depth a little less than the thickness of the wheel. Upon the said wheel I provide an apparatus for clamping the drill-rope H, consisting of upright arms I I hinged to the top of short standards that rise on opposite sides of the orifice G, said arms being capable of opening outward away from each other, and their ends being curved, so that when brought close together they form a flattened tube which receives and clamps the rope. The ends of these arms are encircled by a hinged ring, J, one division of which is riveted or fastened permanently to one of the clamping arms I. When the divisions of the ring are closed they are held so by means of a pin that goes through flanges which project from the ends of the divisions of the ring, and which overlap each other. The clamping arms are forced together, so as to hold the rope stationary, by means of a set-screw, K, which goes through one side of the ring, the head of the screw having a hand-wheel formed on it for the convenience of the operator. L L designate two pawls which engage the teeth of the ratchet-wheel on its opposite sides, said pawl being pivoted loosely to the upper part of the Samson post, one serving to turn the wheel, while the other is raised out of engagement therewith, and so in alternation, and also serving to reverse the direction of rotation of the wheel by means of the cam arms hereinafter mentioned. Upon the walking-beam, and just in front of the Samson post, is a vertical ratchet-wheel, M, setting in a mortise in the beam, on the shaft of which wheel, at one end, is a crank, N, to which is attached a horizontal connecting-rod, O, having an elongated slot P in its forward end, in which slot works a pin that projects from the lower limb of a cam, Q, placed on the adjacent end of a rock-shaft, R, which extends across the walking-beam at that point. The other end of said rock-shaft has also a cam, Q, and these cams are placed under the arms of the pawls L L respectively, so as to raise them in turn out of engagement with the teeth of the ratchet-wheel F, according to the position of the cams. The rotation of the rock-shaft is controlled by a stop, S, formed on the shaft, and projecting through a hole in the covering plate T, with the sides of which hole it comes in contact during the oscillations of the shaft. The vertical ratchet-wheel M is turned by means of a pawl, U, which is loosely fitted on a rod that extends across and above the walking-beam, having its ends fixed in the forked upper arms of the Samson post. A spring detent, V, which engages the ratchet-wheel M beneath the pawl U, serves to prevent the ratchet-wheel from turning backwards while the pawl is slipping over its teeth.

The operation of the machine is as follows: When the walking-beam is vibrated, the pawls L L play on the ratchet-wheel F, their hooks pulling the wheel one notch at every vibration of the walking-beam. The rope being tightly clamped by means of the set-screw in the hinged ring, will turn with the wheel, and hence the auger or drill will be turned by short and uniform degrees, making the bore of the well smooth and round. It will be observed that only one of the pawls L engages the ratchet-wheel F at a time, the other being lifted by one of the cams Q, which are set on their shaft at different angles, so that when one is holding up the arm of one

of the pawls the other allows the other pawl to rest on the ratchet-wheel. At each revolution of the ratchet-wheel M the cam arms Q are reversed by reason of the slot in the end of the connecting-rod O pulling and pushing alternately the crank-pin that works in said slot, and thereby the rotation of the drill is reversed. When the drilling tools are to be raised I loosen the set-screw which holds the clamping arms or jaws together, open the hinged ring, and lay the clamping arms or jaws open, when the tools can be taken out without difficulty through the orifice G in the ratchet-wheel F.

I claim as new, and desire to secure by Letters Patent—

1. The clamping arms or jaws I I, clamping the rope of drilling tools, in combination with the ratchet-wheel F, with which said jaws turn, substantially as described.

2. I also claim the combination of the pawls L L, the walking-beam, the horizontal ratchet-wheel F, the cams Q Q, for raising the pawls L above the ratchet-wheel F automatically, and the slotted connecting-rod O, substantially as described.

3. I also claim the vertical ratchet-wheel M, and its pawl, in combination with the slotted connecting-rod O, and cams Q Q, substantially as described.

4. I also claim the orifice G, through the ratchet-wheel F, and through the bed-plate E, and walking-beam B, in combination with the hinged clamping arms or jaws I I, substantially as described.

NELSON PONTIOUS.

Witnesses:

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