No. 874,090. PATENTED DEC. 17, 1907.

T. LEELAND.

BORING MACHINE.

APPLICATION FILED JAN. 27, 1906.

2 SHEETS—SHEET 1.

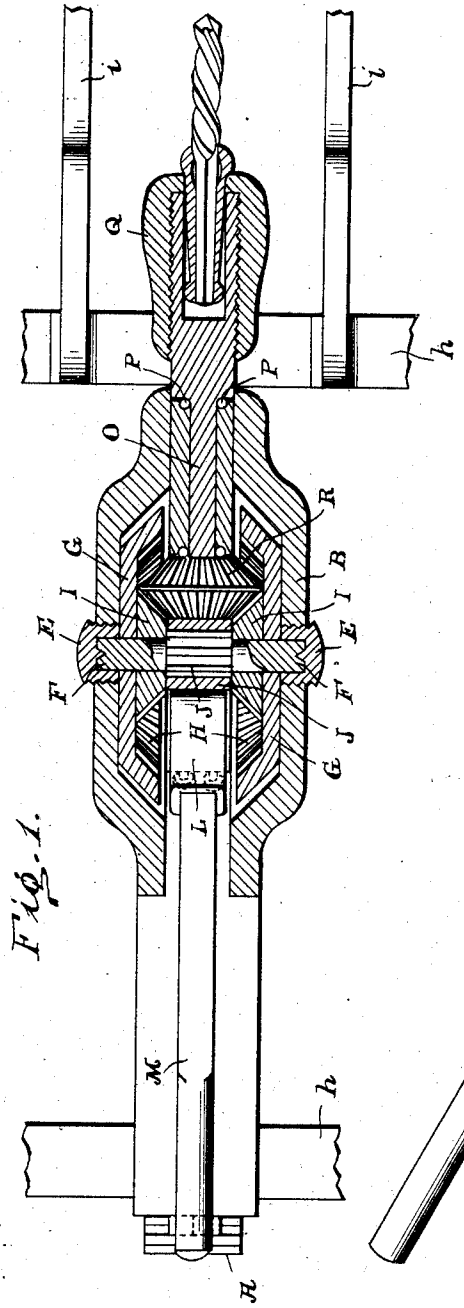


Fig. 1.

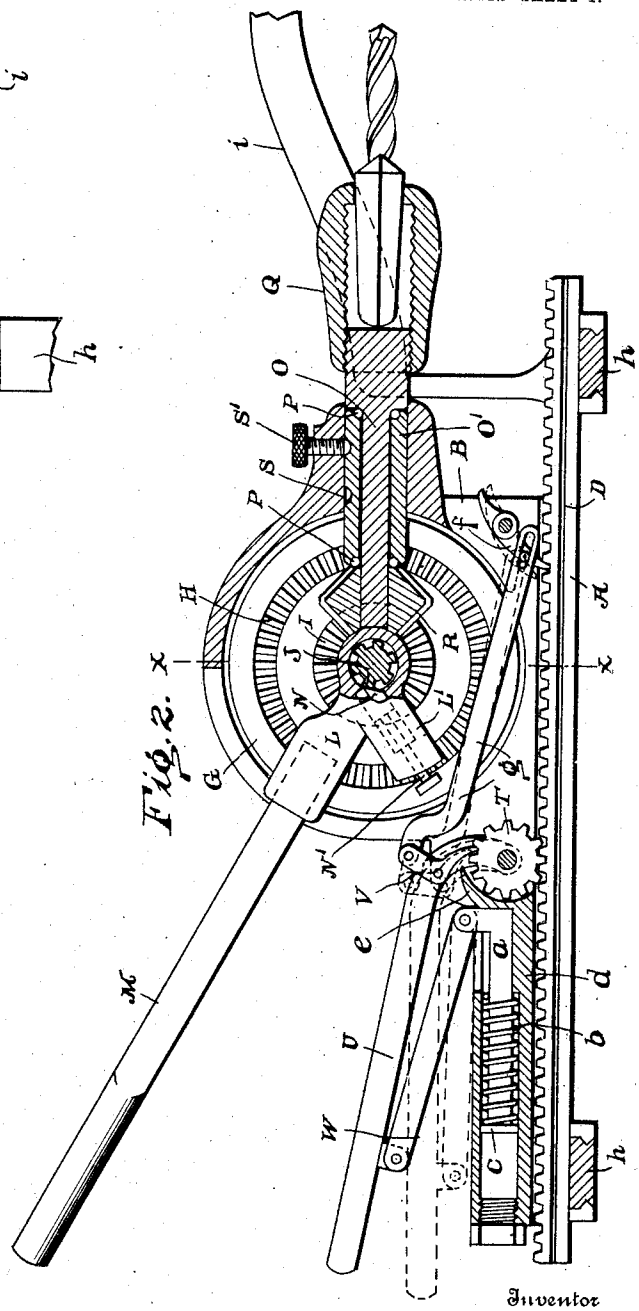


Fig. 2.

Witnesses

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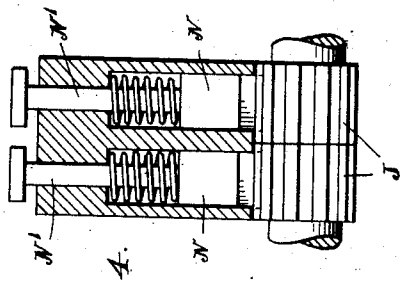


Fig. 4.

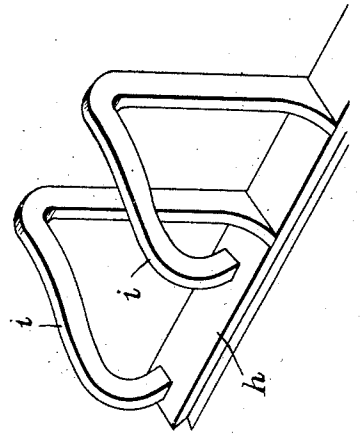


Fig. 5.

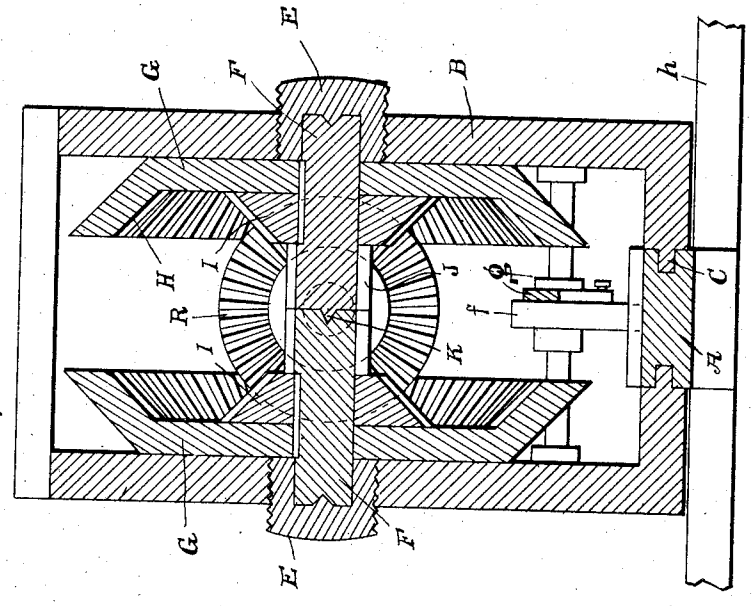


Fig. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

THORVAL LEELAND, OF NEWARK, NEW JERSEY.

BORING-MACHINE.

No. 874,090. Specification of Letters Patent. Patented Dec. 17, 1907.

Application filed January 27, 1906. Serial No. 298,119.

To all whom it may concern:

Be it known that I, THORVAL LEELAND, a citizen of Norway, residing at Newark, county of Essex, and State of New Jersey, have invented a certain new and useful Improvement in Boring-Machines, of which the following is a specification.

My invention relates to a new and useful improvement in boring machines, and has for its object to provide an exceedingly simple and effective device of this description which may be readily fed to the work and which may be quickly adjusted so as to give the drill two different speeds.

With these ends in view, this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a longitudinal section of the device. Fig. 2, a similar view taken at right angles to Fig. 1. Fig. 3, an enlarged section at the line X—X of Fig. 2, looking in the direction of the arrow. Fig. 4, a section through the pawl housings showing the pawls and ratchets for revolving the gears, and Fig. 5, a detail perspective of the hook for engaging the work.

In carrying out my invention as here embodied, A represents a rack bar upon which is mounted the frame B so as to slide thereon, the tongues C running in the grooves D so as to hold the frame against sidewise displacement but permitting it to slide longitudinally of the bar.

E represents two bearing sockets which are threaded into the frame and in which are journaled the outer ends of the short shafts F, each of the latter having keyed thereon one of the wheels G which wheel is composed of the large internal bevel gear H and the small external bevel gear I, the inner ends of the short shafts F are enlarged and have formed thereon the ratchet wheels J, and in order that these short shafts may revolve independent of each other and their ends being held in alinement, a projection K is formed upon one of said shafts and projects into a corresponding recess formed in the opposite shaft as clearly shown in Fig. 3.

L represents a lever which is journaled around the ratchet wheels J and which has a socket formed therein for the reception of the operating handle M, and around this lever is also formed a housing L′ in which are set the spring actuated pawls N, each of which is adapted to engage one of the ratchet wheels J, and so set as to actuate one ratchet wheel in one direction, when the handle N is moved in that direction, and the other ratchet wheel in the other direction when said handle is moved in the opposite direction, and these pawls have the stems N′ projecting through the housing and terminating in knobs in order that the operator may disengage them from their ratchets when occasion requires. By this arrangement it will be seen that when the handle M is reciprocated the ratchet wheels will be revolved one in one direction, and the other in the opposite direction, and as the wheels G are keyed upon the same shaft with the ratchets, these wheels will be revolved one in one direction, and the other in the opposite direction, and as they mesh with the gear R on the spindle, this spindle will be given a continuous rotary motion in one direction as will be readily understood.

O represents the chuck spindle which is journaled in the sleeve O′ by means of the ball bearings P and upon the outer end of the spindle is secured the chuck Q for holding any suitable drill.

The inner end of this spindle has secured thereon the double bevel pinion R which is adapted to mesh either with the internal bevel gears H or the external bevel gears I, and as these two last named gears are of different diameters it follows that when the bevel pinion R is in engagement with the small bevel gears I the speed of the drill spindle will be considerably less than when this bevel pinion is in engagement with the large bevel gears H.

In order that the bevel pinion R may be put and held in engagement either with the small or the large bevel gears, the sleeve O′ is provided with notches or countersinks S into which the end of the set screw S′ fits so that to change the speed of the drill spindle it is only necessary to back off the set screw S′ and slide the sleeve O′ longitudinally, thus carrying the bevel pinion R into engagement with one or the other of the sets of gears, and

when the set screw is again run into one of the notches S the bevel pinion will be held in this engagement.

The pinion T is journaled in the frame B and meshes with the rack bar A so that when this pinion is revolved in the proper direction it follows that the frame will be fed forward, and in order that the pinion may be revolved in the proper direction a lever U is pivoted around the spindle of the pinion T and has mounted thereon the pawl V, this pawl is adapted to engage with the pinion and when the lever U is raised the pinion will be revolved step by step and thus feed the frame forward as before set forth, and in order that the lever may be normally drawn downward a link W connects said lever with the plunger *a* around which is coiled the spring *b* interposed between the head *c* and the inner wall of the housing *d* in which the plunger is fitted.

In order to save time in adjusting the machine for its work it is necessary to move the frame back and forth freely until the drill has been brought into contact with the work to be bored, and to accomplish this a lug *e* is so arranged that the pawl V will come in contact therewith when the lever U is moved downward through the last portion of its stroke, thus disengaging the pawl V from the pinion T which will leave the latter free to revolve and thus permit the sliding of the frame to and fro upon the rack bar, and when the frame is thus set to the position for starting, the drilling detent *f* engaging with the rack bar will prevent the frame from backing off when the drill is forced to its work.

It is of course necessary to disengage the detent *f* from the rack bar when the frame is to be moved backward, and in order that this may be accomplished automatically when the pawl V is disengaged from the pinion, a link *g* is pivoted to the pawl V and connected by the slide with the detent *f*, so while not interfering with the engagement of the detent with the rack bar while the pawl V is in engagement with this pinion, yet while said pawl is drawn out of said engagement with the pinion the detent will also be drawn out of engagement with the rack bar.

In order that the machine may be supported by the ties of the ordinary railway track while in operation, I provide the braces *h* to which the rack bar is secured in such manner as to slide thereon and to hold the rack bar and braces in proper relation to the rail being drilled, I provide the hooks *i* which are secured to one of the braces and adapted to engage the rail as will be readily understood.

While my machine is adapted for a large variety of work, it is especially intended for use in drilling railway rails while they are in place, for inserting the bond wires for signaling purposes.

Having thus fully described my invention, what I claim as new and useful, is—

In combination with a drilling mechanism, a frame in which said mechanism is carried, a rack bar upon which said frame is mounted so as to slide thereon, braces to which said rack bar is secured, a pinion journaled in the frame and meshing with the teeth of the rack bar, a lever pivoted concentric with the pinion, a pawl carried by said lever, a spring actuated plunger, a lug connecting said plunger with the lever, a detent pivoted in the frame and adapted to engage the teeth of the rack bar, and a link connecting the pawl with said detent, as specified.

In testimony whereof, I have hereunto affixed my signature in the presence of two subscribing witnesses.

THORVAL LEELAND.

Witnesses:
N. W. HOVLAND,
ADOLPH G. HOCH.