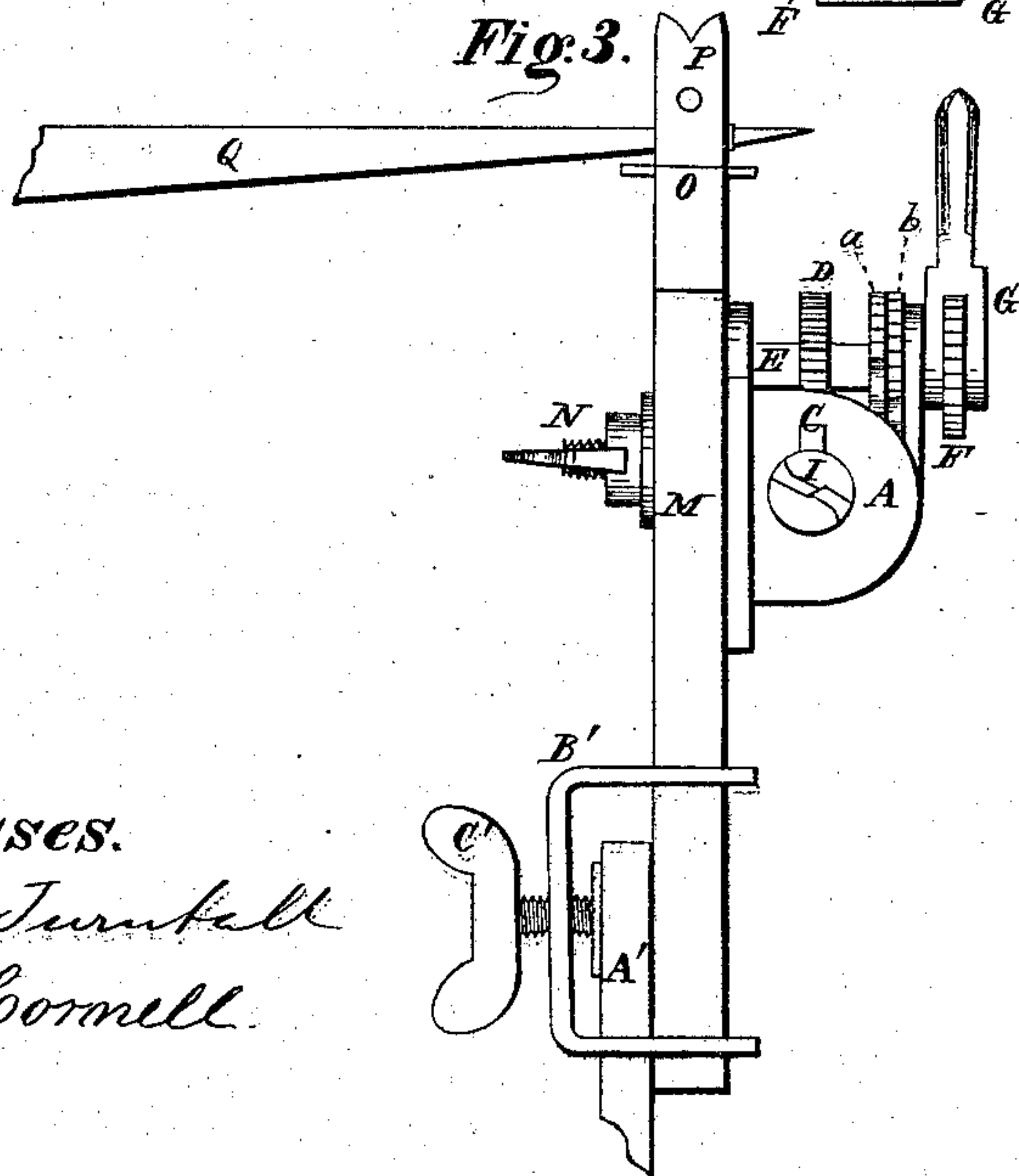
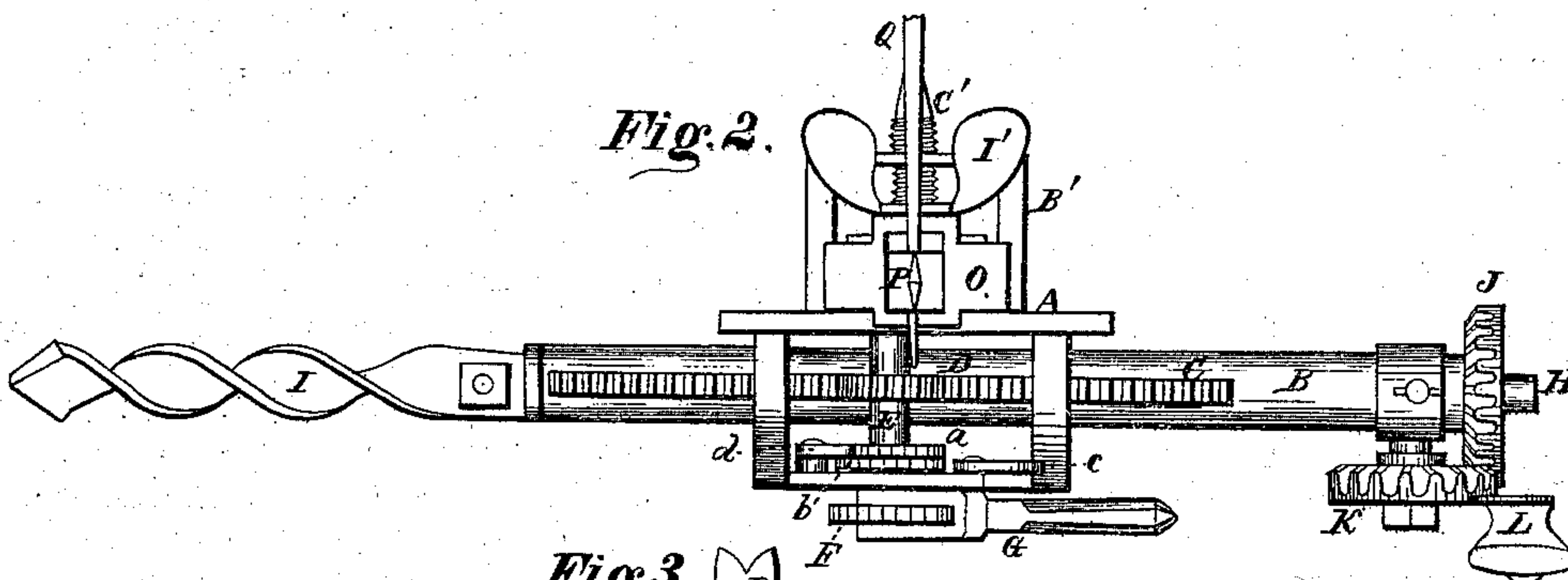
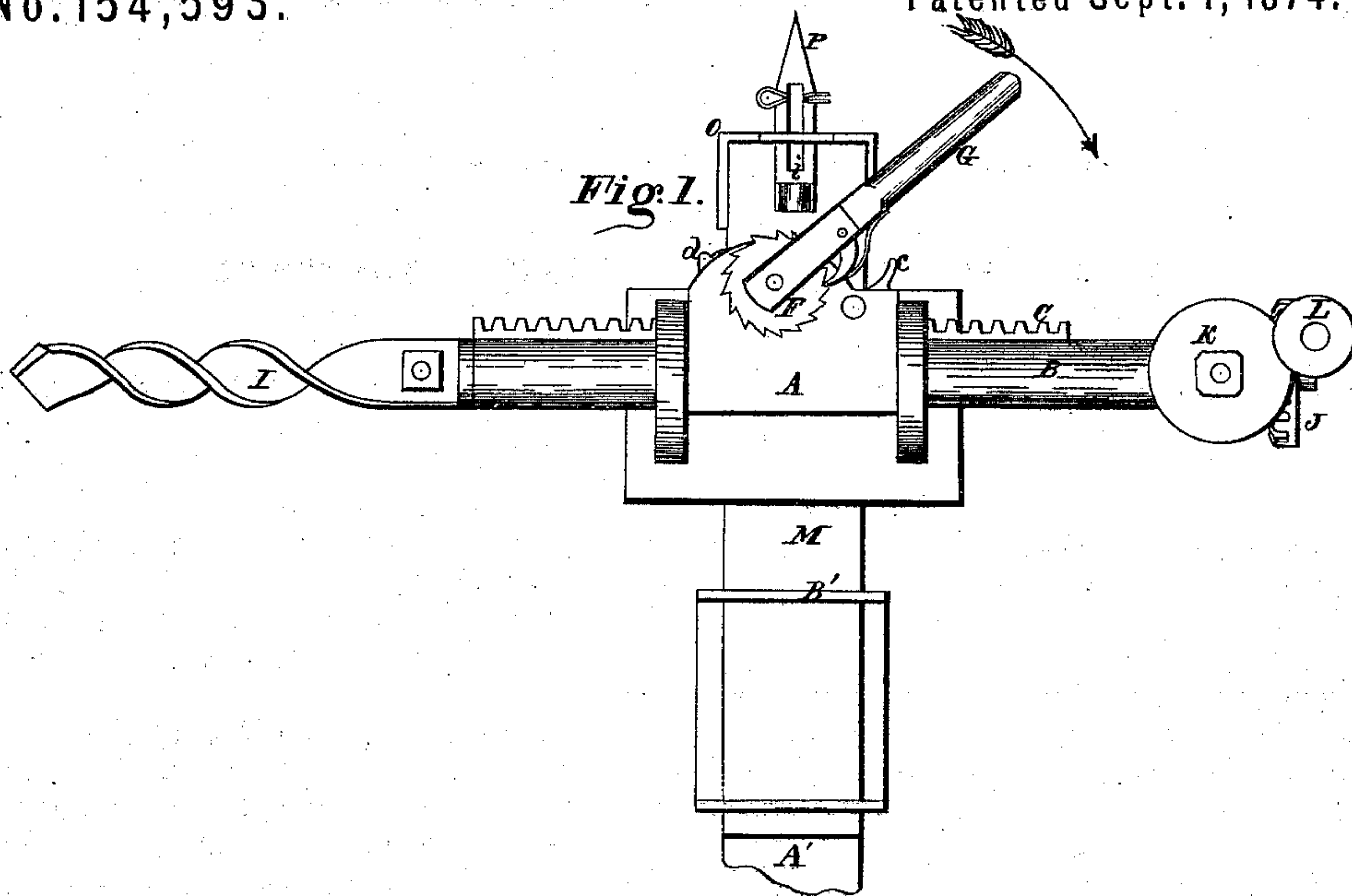


M. H. EVANS.
Coal-Drilling Machines.

No. 154,593.

Patented Sept. 1, 1874.



Witnesses.
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UNITED STATES PATENT OFFICE.

MORGAN H. EVANS, OF VIENNA, OHIO.

IMPROVEMENT IN COAL-DRILLING MACHINES.

Specification forming part of Letters Patent No. **154,593**, dated September 1, 1874; application filed April 23, 1874.

To all whom it may concern:

Be it known that I, MORGAN H. EVANS, of Vienna, in the county of Trumbull and State of Ohio, have invented a certain new and Improved Coal and Rock Drill, of which the following is a full and complete description, reference being had to the accompanying drawing, making part of this specification, in which—

Figure 1 is a side view of the drill. Fig. 2 is a plan view. Fig. 3 is an end view.

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

This invention consists, in part, of a drill for mining coal; and which consists of a hollow shaft, in which is fitted and revolved a rod, whereby the drill is operated by a pair of miter-pinions. Along the outside of the hollow shaft is secured a rack, in which runs a pinion, operated by a ratchet-wheel and pawl, for feeding the drill. The drill is also adjustable for boring at any angle that may be required.

The invention also consists in a device whereby the stanchions to which the drilling apparatus is adjusted can be secured in an upright position in the mine, so that it may be of a strong and substantial character for holding the drill in position; all of which is constructed and operated in the manner as follows:

In the drawings, A represents a bracket, in which is fitted a hollow shaft or sleeve, B. To the side of said sleeve is secured a rack, C, whereby the sleeve is moved backward and forward in the bracket by a pinion, D, Fig. 3, on the shaft E. On said shaft is also secured check-wheels *a b*, each of which is provided with a pawl, *c d*. To the extreme end of the shaft is secured a ratchet-wheel, F, and pawl G, whereby the shaft is operated for moving the sleeve B. In the sleeve B referred to is closely but loosely fitted a shank or shaft, H, Fig. 2. To one end of said shaft is attached the drill I. To the opposite end is secured the pinion J, which is made to engage the pinion K, whereby the shaft is turned by the crank L for operating the drill. M is a stanchion, to which the bracket and drill are attached by the screw N for drilling. To the upper end of the stanchion is secured a cap,

o, in which is loosely fitted a dog, P, having a double sharp-pointed end. In said dog is a slot, *i*, Fig. 1, in which is fitted a wedging-key, Q, Fig. 3, the purpose of which will presently be shown.

The practical application and use of the above-described device are as follows: The stanchion M is set upright in the mine, with the lower end resting upon the floor. The upper end is held by the dog P, the pointed ends whereof are forced into the ceiling or roof by driving in the key Q, thereby forcing upward the dog. By this means the stanchion is firmly held in position.

In the event that the stanchion is too short, it can be lengthened by the addition thereto of a piece of timber, A', Fig. 3, which is fitted to the end of the stanchion by a clamp, B', and set-screw C'. By this means the stanchion can be easily and readily shortened or lengthened, as may be necessary.

The drill being set up in the mine and properly adjusted, the boring is now done by turning the crank L, thereby revolving the drill, during which time it is fed forward by the rack and pinions C D, operated by the ratchet-wheel and pawl F G on turning it in the direction of the arrow in Fig. 1. The check-wheel *a* and the dog *d* will prevent the reaction of the wheel while being operated by the pawl. In thus feeding the drill by the rack and pinion, the amount of feed can be graduated according to the hardness of the rock, coal, or other material drilled.

In the event the condition of the coal is such as to require the drilling to be done in the opposite direction, as on the opposite side of the mine, and too close to the wall to admit of the operation of the crank between the drill and the wall, the sleeve and drill can be withdrawn from the bracket and inserted therein in a reverse position. This will allow the drill to be placed quite close to the wall. In making this change of the drill the ratchet-wheel and pawl F G must also be reversed, and also the gearing K H. To operate the drill in this changed condition, the check-wheel *b* and dog *c* will now be used for preventing the reaction of the ratchet-wheel F instead of the check-wheel *a* and the dog *d*.

The boring may be done at any angle above

or below a horizontal line by loosening the screw N, which will allow the bracket to be turned on the stanchion, so that the drill may be directed to any particular point to be drilled.

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

1. The check-wheels and dogs *a b* and *c d*, in combination with the ratchet-wheel and pawl F G, to operate in combination with the

drill-shaft H, sleeve B, rack C, pinion D, and pinions J K, as and for the purposes specified.

2. The dog P, key Q, and cap *o*, in combination with the stanchion M, in the manner as described, and for the purpose set forth.

MORGAN H. EVANS.

Witnesses:

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