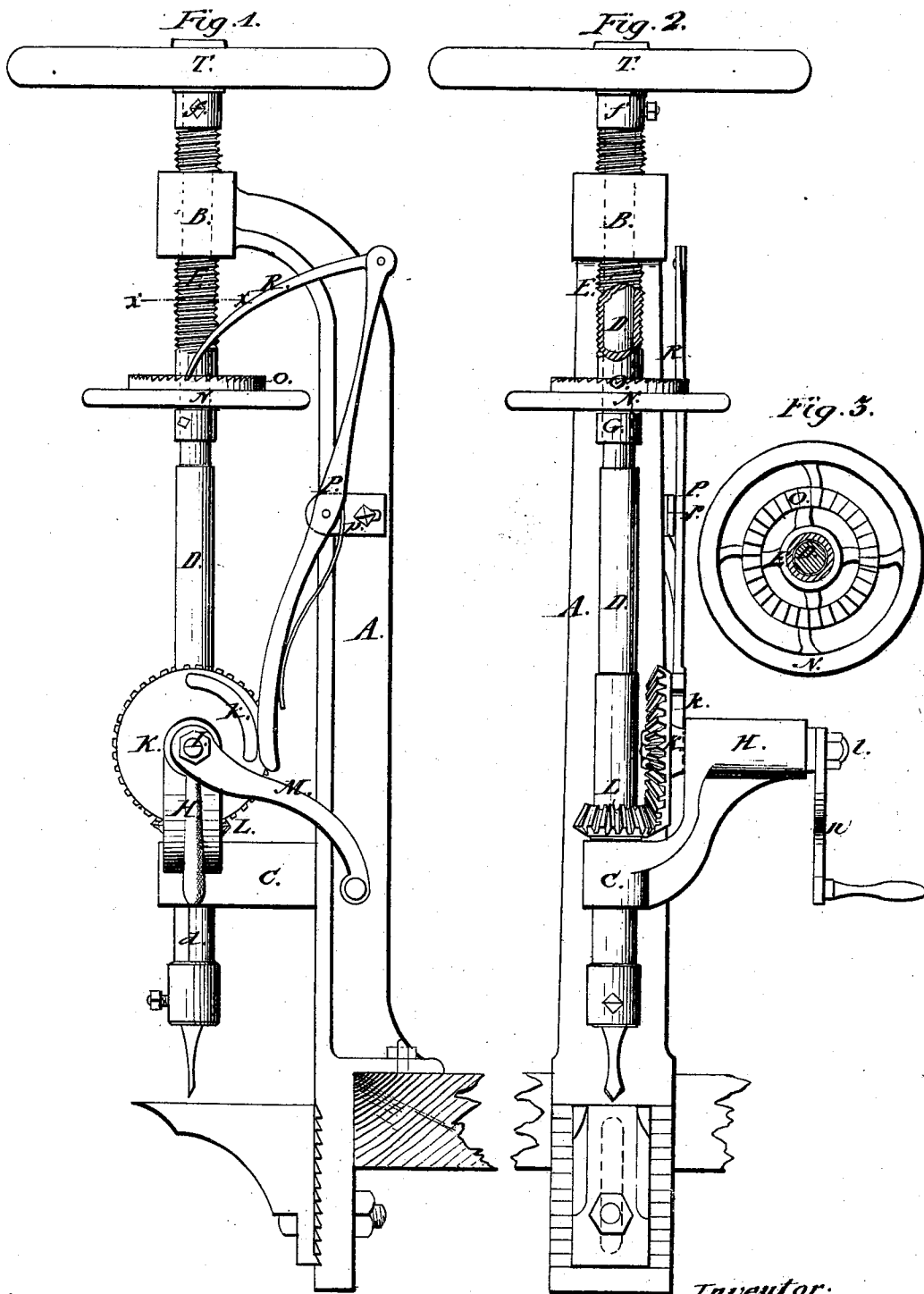


H and D.L. Bates, Drill.

No 92,419.

Patented Jul. 13. 1869.



Witnesses:
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HAMILTON BATES AND DANIEL L. BATES, OF DAYTON, OHIO.

Letters Patent No. 92,419, dated July 13, 1869.

IMPROVED DRILL.

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

To all whom it may concern:

Be it known that we, HAMILTON BATES and DANIEL L. BATES, of Dayton, in the county of Montgomery, and in the State of Ohio, have invented certain new and useful Improvements in Hand-Drills; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1 is a side elevation of our improved drill;

Figure 2 is a front elevation of the same; and

Figure 3 is a cross-section of the drill and screw-mandrels, on the line $x x$ of fig. 1.

Letters of like name and kind refer to like parts in each of the figures.

The nature of our invention consists in the general construction and arrangement of the various parts of the drill, and in the devices employed for operating the feed automatically, as is hereinafter fully set forth.

In the annexed drawing—

A represents the vertical portion of the frame, which curves forward near its upper end B, so as to bring said end in a horizontal position, or at a right angle to said frame.

Extending outward from the frame, near its lower end, at a right angle with its face, is an arm, C, the outer end of which is in line with the end B, and, in connection therewith, furnishes a bearing for the drill and feed-mandrels D and E; the feed-mandrel being hollow, and provided with a male-screw thread upon its surface, corresponding with a female-screw thread within the opening of the end B, the upper part of the drill-mandrel being reduced in size, so as to pass through said feed-mandrel, and having secured to its upper end a balance-wheel, F.

The hub f of the balance-wheel furnishes a bearing for the upper end of the feed-mandrel, and a collar, G, secured upon the drill-mandrel by a set-screw, g , furnishes a bearing for its lower end, so that while either of said mandrels may revolve independent of the other, their relative position longitudinally is always maintained.

Extending upward and outward from the outer end of the arm C, is an additional arm, H, which furnishes a bearing for a shaft, I, said bearing being horizontal and at a right angle with the line of the arm C.

Attached to the inner end of the shaft I, is a bevel-gear, K, the teeth of which mesh with those of a bevel-pinion, L, through which the drill-mandrel passes.

The bevel pinion is provided with a hub, which extends through the bearing in the arm C, and has upon its inside a key or feather, corresponding with a slot, d , extending lengthwise upon the drill-mandrel, by means of which a rotary motion, given to said pinion, is communicated to said mandrel, which at the same time is allowed to pass freely through said pinion in a vertical direction.

A crank, M, secured to the outer end of the shaft I, furnishes a means for imparting motion, through said shaft-gear and pinion, to the drill-mandrel.

Secured to the lower end of the feed-mandrel is a wheel, N, by means of which a rotary motion can be given to said mandrel by the hand, and the drill-mandrel raised or lowered, as may be desired.

As, however, it often proves inconvenient to operate the drill and feed, and at the same time attend to the work, the following-described means are employed to secure an automatic downward feed:

Attached to the upper side of the wheel N is a ring, O, having upon its upper face a series of angular teeth.

A lever, P, pivoted at its centre to a lug, p , secured to the frame, is provided at its upper end with a pawl, R, the rear end of which is pivoted to said lever, while its front end rests upon and engages with the teeth of the ring O.

The lower end of the lever extends forward beside the rear face of the bevel-gear K, so as to engage with a semicircular projection or cam, k , upon said face, so that at each revolution of said gear, the lower end of said lever shall be pressed backward, and, by means of the pawl, rotate the ring O and feed-mandrel.

This device possesses many advantages over any in use intended for a like purpose, among which are—

First, strength and durability. The frame and arms being cast in one piece, there is no possibility that any of the working-parts should get out of line, or in any manner become deranged, and by the length of the bearings in said frame, and the proportion of the several parts of the device, great durability is secured.

Second, the automatic feed-devices are simple, durable, and perform their office in the most perfect manner, rendering the drill far more easy to operate than would be possible without them.

Having thus fully set forth the nature and merits of our invention,

What we claim as new, and desire to secure by Letters Patent, is—

The improved automatic feed-devices, consisting of the ring O, lever P, pawl R, and projection or cam k , upon the bevel-gear K, all constructed and arranged to operate substantially as and for the purpose shown.

Also, the within-described improved drill-press, consisting of the frame A, B, C, and H, mandrels D and E, balance-wheel F, hand-wheel N, shaft I, gear and pinion K and L, and crank M, in combination with the automatic feed-devices hereinbefore described, substantially as and for the purpose specified.

In testimony that we claim the foregoing, we have hereunto set our hands, this 7th day of June, 1869.

HAMILTON BATES.
DANIEL L. BATES.

Witnesses:

JOHN F. HELLER,
THOS. D. MITCHELL.