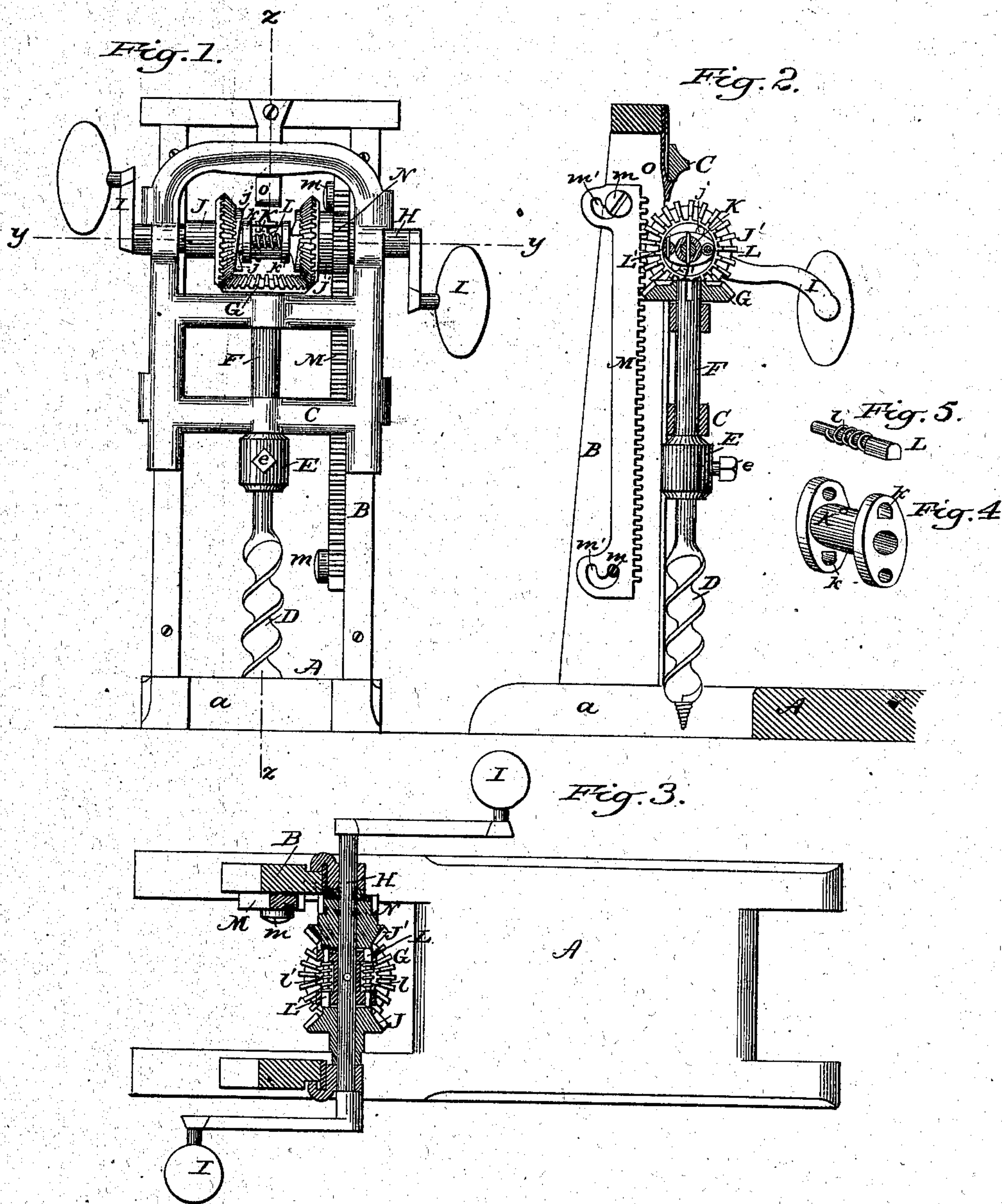


W. TUCKER.
BORING MACHINE.

No. 104,797.

Patented June 28, 1870.



Witnesses:

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WILLIAM TUCKER, OF FISKEDALE, MASSACHUSETTS.

Letters Patent No. 104,797, dated June 28, 1870.

IMPROVEMENT IN BORING-MACHINES.

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

I, WILLIAM TUCKER, of Fiskedale, in the county of Worcester and State of Massachusetts, have invented an Improved Boring-Machine, of which the following is a specification.

Nature and Objects of the Invention.

The device is a portable wooden boring-machine, such as used by carpenters for mortising and slotting timber, the auger being mounted in a sliding gate in an upright frame, and actuated through a pair of hand-cranks on a horizontal driving-shaft geared to and traversing vertically with the auger.

The invention consists, firstly, in employing a pair of driving-gears on the crank-shaft, respectively connected thereto in opposite movements, so as to cause a forward rotation of the auger to be produced by the movement of the cranks in either direction.

The object of this part of the invention is to enable the workman to use his strength economically, by applying it in the most advantageous manner, and to permit of change of position and motion.

The invention further consists in a peculiar construction of clutch for attaching the driving-gears to their shaft, the same being of superior simplicity and compactness.

Also, in a means for locking the driving-gear so as to enable the auger to be turned backward when desired.

Description of the Accompanying Drawing.

Figure 1 is a front elevation of my improved boring-machine in a practical form.

Figure 2 is a vertical longitudinal section on the line *z z*, fig. 1.

Figure 3 is a horizontal section on the line *y y*, fig. 1.

Figures 4 and 5 are perspective views of parts of the clutch of the driving-gear detached and on a larger scale.

Similar letters of reference indicate like parts in all the figures.

General Description with Reference to the Drawing.

The frame of my improved machine may be of customary form, having a base, *A*, extended forward to form a seat for the operator, and recessed, *a*, at its rear end to expose the work on which it rests, and an upright frame, *B*, erected over this aperture to constitute a guide and support for a gate, *C*, in which the auger and its operating devices are mounted.

The auger-bit *D* is secured by a set-screw, *e*, or its equivalent, in a socket, *E*, in the lower end of a vertical shaft, *F*, mounted in the gate *C*, and receives its motion through said shaft and a tight bevel-gear, *G*, on its upper end from a horizontal driving-shaft, *H*, above it in said gate, as shown.

The driving-shaft *H* is provided with the usual pair of hand-cranks, *I*, on its projecting ends, arranged on opposite sides, and is arranged at such distance above the upper end of the bit-shaft *F* as to accommodate proper-sized driving-gears.

For conveying the motion of the driving-shaft *H*, I arrange thereon, facing each other and meshing with the bevel-gear *G* on the bit-shaft *F*, two loose gears, *J J'*, which are respectively connected to the said shaft in different movements a suitable clutch arrangement being employed for this latter purpose, which may be as follows:

Attached to the driving-shaft *A*, between the gears *J J'*, is what I term a "stock," *K*, carrying a pair of clutch-pins, *L L'*, held in longitudinal sockets *k k* therein, and projected in opposite directions by springs *l*.

These clutch-pins *L L'* project against the inner faces of the gears *J J'*, which are provided with lugs *j*, (one or more,) beveled in opposite directions for their engagement, being adjusted to secure the forward movement of the bit, as required.

It will be seen that, on turning the cranks in either direction, a forward motion will be conveyed to the bit through one or the other of the gears. The cranks, moreover, need not be rotated, but may be oscillated within the most effective portions of their paths, thus enabling the operator to avoid disadvantageous points, and in this manner to economize his strength.

To provide for backing the bit by means of the cranks, when desired, as in withdrawing the gimlet-point of a bit from the wood, I provide one of the clutch-pins *L L'* with a transverse pin or handle, *l'*, and the face of the gear *J'* behind it with sockets *j'* for the reception of its stem. By forcing the said clutch-pin back into one of the said sockets the connection is reversed, and by turning the cranks backward, a backward motion will be imparted to the bit. No special means are required for retaining this connection. The binding pressure on the pin incident to the resistance of the bit is sufficient. Any suitable means may, however, be provided, if deemed preferable.

For withdrawing or elevating the bit a movable longitudinal rack, *M*, is provided on the inner face of one of the uprights of the frame being held by screws *m* passing through heart-shaped slots *m'*, (two or more,) and the adjoining gear *J'* of the driving-gears *J J'* is constructed with a pinion, *N*, on its hub, adapted to engage with said rack. The said rack, in the position represented in the drawing, is supported out of mesh by its gravity. By shifting it so that the opposite ends of its slots shall receive the screws, the same force tends to hold it in mesh with the said pinion *N*, the engagement of which, in the rotation of the cranks, elevates the gate *C* and its appurtenances, raising the bit clear of the work.

A spring catch, O, at the top of the frame, may enable the gate to be temporarily retained in its elevated position.

It will be observed that, owing to the constant mesh of both the driving-gears J J' with the gear G on the bit-shaft in the arrangement represented, the motion of the handles is imparted to the elevating pinion N in the same manner as to the bit.

The several features of the invention may, of course, be used separately, and are obviously susceptible of numerous modifications in unessential particulars.

Claims.

I claim as new—

1. In combination, with the crank-shaft H, bit-shaft F, and bit-shaft gear G, of a portable boring-machine;

substantially as herein referred to, the two driving-gears J J' adapted to operate as described, for the purpose set forth.

2. The combination of the pair of driving-gears J J', mounted loosely in a common shaft, H, the central fast stock K k, spring clutch-pins L L', and beveled lugs j, all constructed and arranged to operate substantially as set forth, for the purpose shown.

3. The combination, with the driving-gears J J', and the clutch-pins L L' of the reversing handle l' and sockets j', formed and arranged substantially as represented and described, for the purpose set forth.

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Witnesses:

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