

No. 618,894.

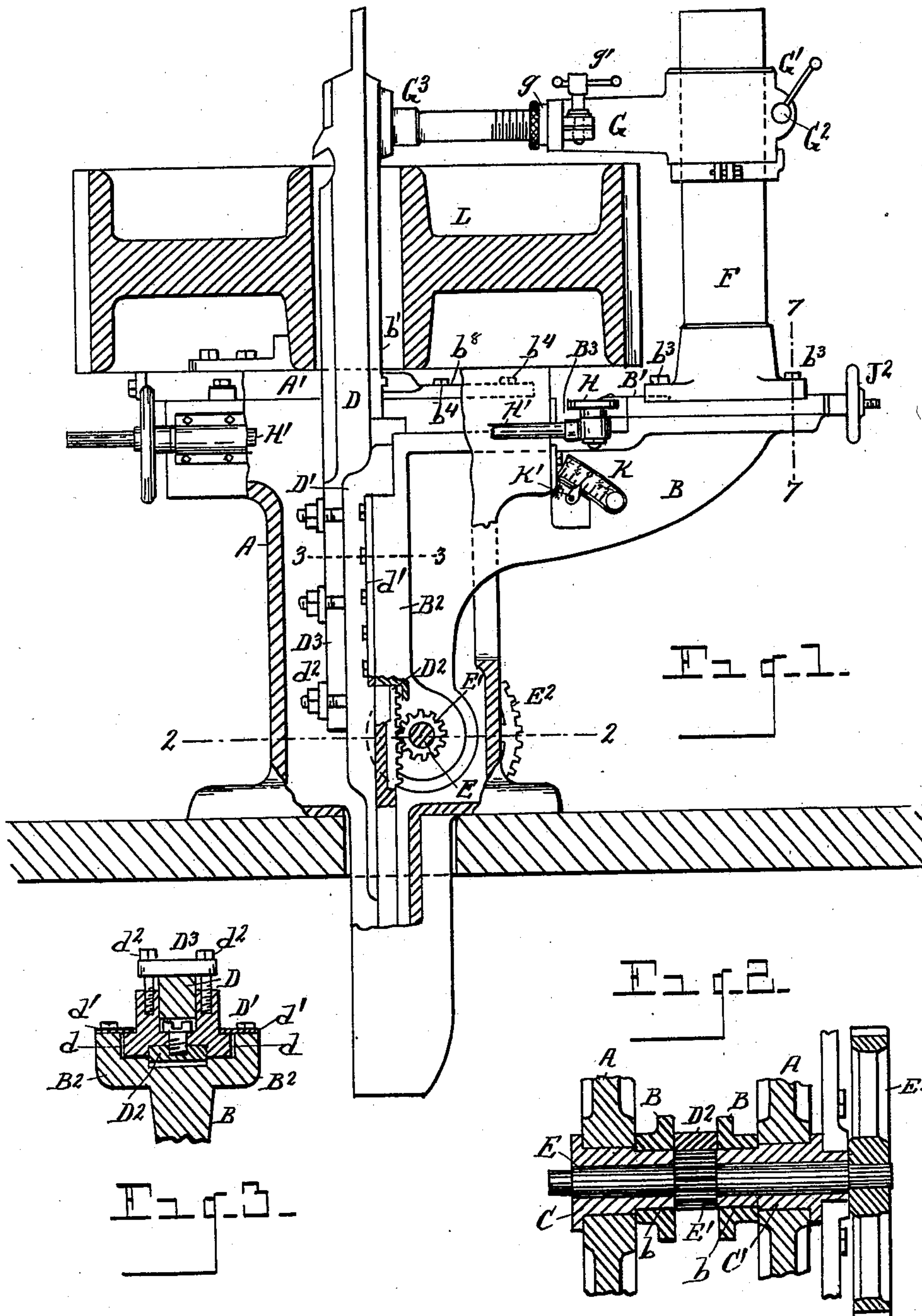
Patented Feb. 7, 1899.

M. & H. E. MORTON.
KEY SEAT CUTTING MACHINE.

(Application filed Dec. 8, 1897.)

(No Model.)

3 Sheets—Sheet 1.



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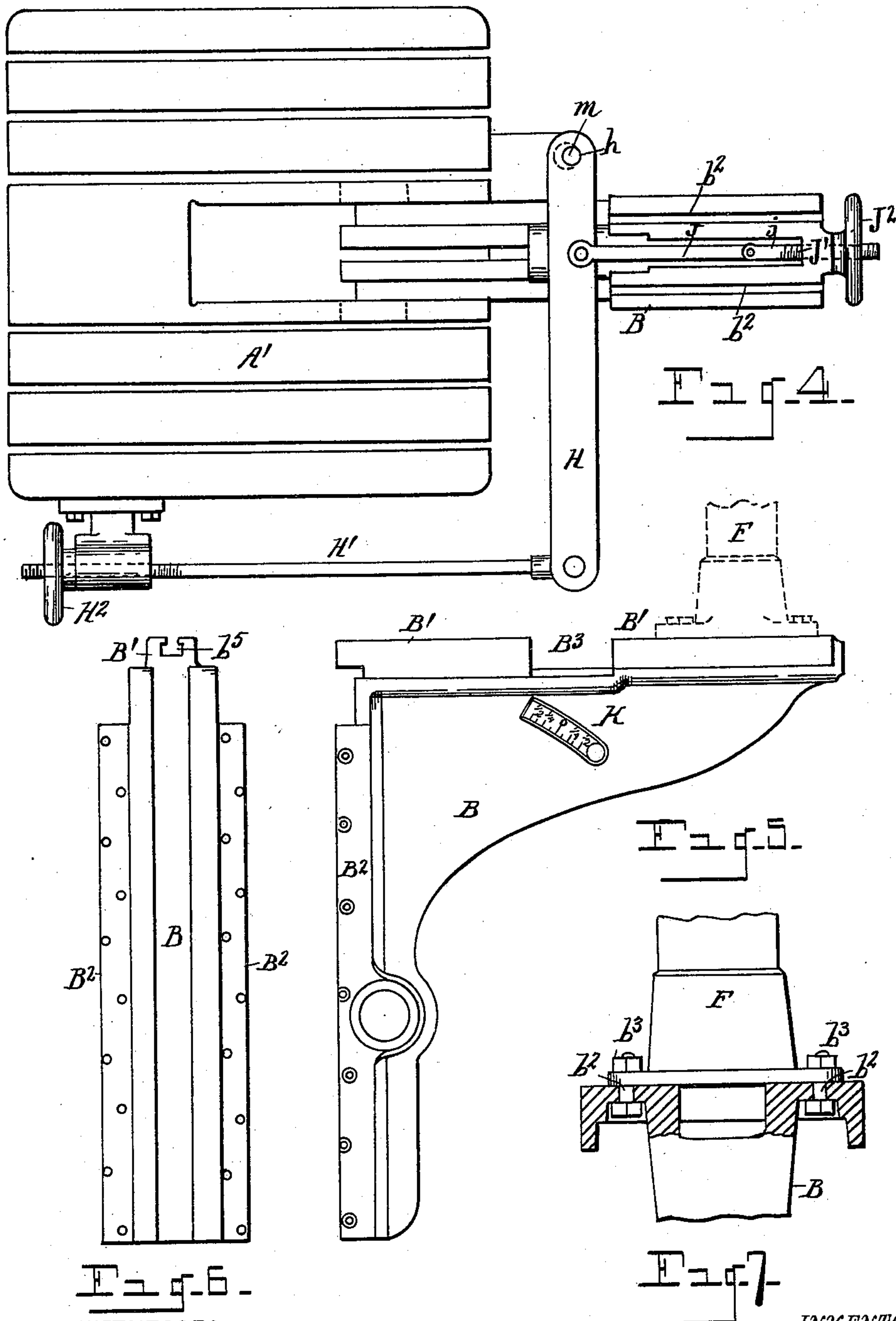
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3 Sheets—Sheet 2.



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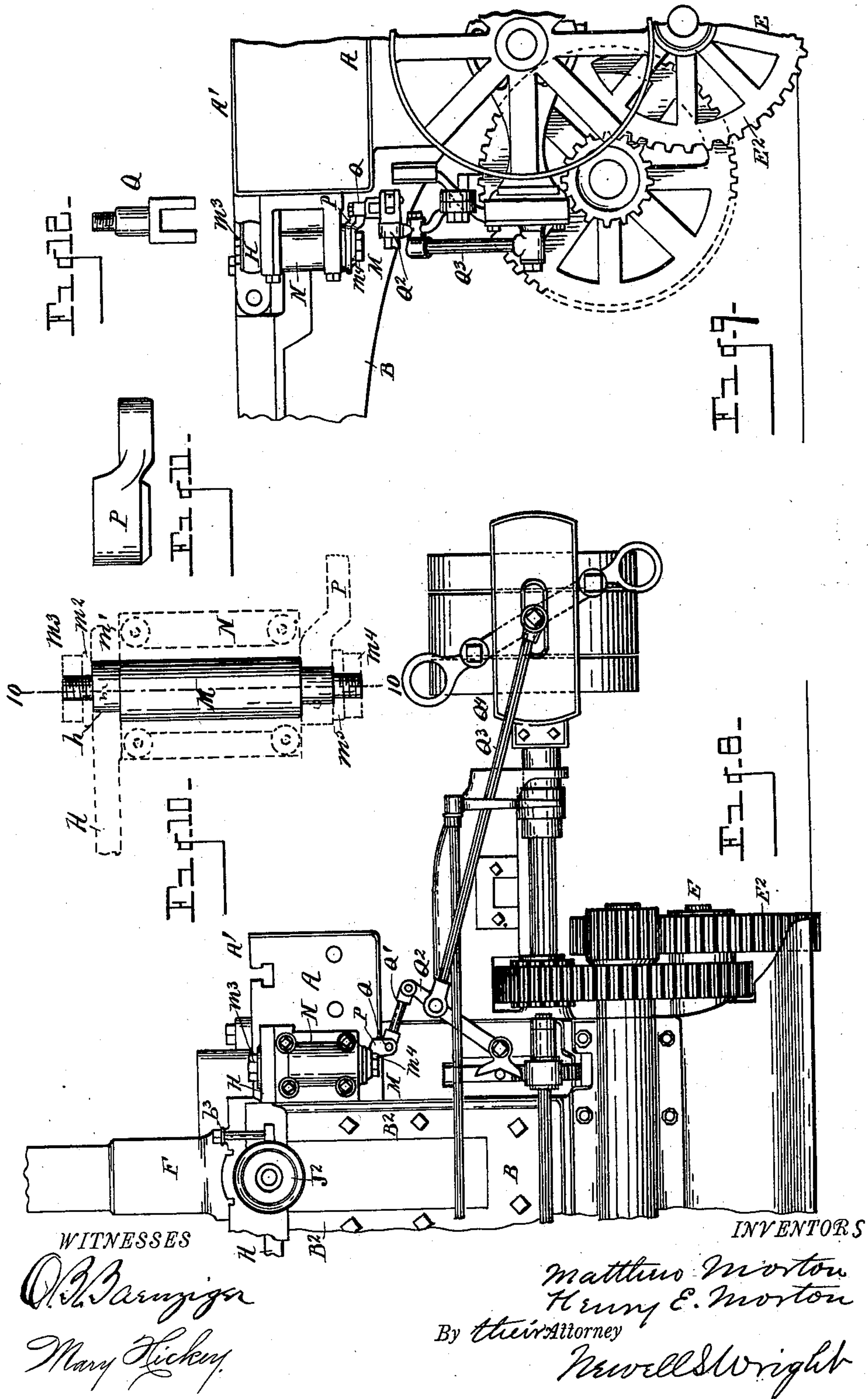
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3 Sheets—Sheet 3.



UNITED STATES PATENT OFFICE.

MATTHEW MORTON AND HENRY E. MORTON, OF MUSKEGON, MICHIGAN.

KEY-SEAT-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 618,894, dated February 7, 1899.

Application filed December 8, 1897. Serial No. 661,154. (No model.)

To all whom it may concern:

Be it known that we, MATTHEW MORTON and HENRY E. MORTON, citizens of the United States, residing at Muskegon Heights, county of Muskegon, State of Michigan, have invented a certain new and useful Improvement in Key-Seat-Cutting Machines; and we declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

Our invention has for its object certain new and useful improvements in a key-seat-cutting machine, our invention being designed to provide such a machine of superior utility; and it consists of the construction, combination, and arrangement of devices hereinafter specified and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a view, partly in side elevation and partly in section, illustrating features of our invention. Fig. 2 is a horizontal section on the line 2 2, Fig. 1. Fig. 3 is a view in horizontal section on the line 3 3, Fig. 1. Fig. 4 is a plan view. Fig. 5 is a detail view of the tilting frame. Fig. 6 is a rear elevation of the same. Fig. 7 is a vertical section on the line 7 7, Fig. 1. Fig. 8 is a partial rear elevation. Fig. 9 is a partial side elevation. Fig. 10 is a detail view of the eccentric-shaft with related parts shown in dotted lines. Fig. 11 is a detail view of the crank. Fig. 12 is a detail view of the swivel for the connecting-rod.

We carry out our invention as follows:

A represents a fixed frame or support provided with a bed or table A'.

B is a tilting frame having a jointed engagement toward its base with the fixed frame A. The fixed frame is preferably made bifurcated at its lower end, as indicated more particularly in Fig. 2, and is provided with two sleeves or bearings C C', upon the adjacent ends of which the tilting frame is journaled, as indicated at b, Fig. 2, said tilting frame being also preferably bifurcated toward its lower end, as indicated in Fig. 2.

D is a reciprocatory cutter-bar, preferably engaged in a holder D', provided toward its lower end with a rack-bar or toothed portion,

(indicated at D².) The holder D' reciprocates in guideways (indicated at d) of the tilting frame. Within the sleeves or bearings C C' is journaled a driving-shaft E, provided with a pinion E', meshing with the rack D². E² is a driving-gear or other analogous driving device upon the driving-shaft. The tilting frame B, it will be understood, being jointly supported upon the sleeves or bearings C C', may readily be adjusted, the cutter-bar D being carried therewith held in the guides d d of said tilting frame. By this means the cutter-bar may be tilted to any desired angle in a ready and convenient manner.

The manner of engaging the cutter-bar in the holder D' forms no special feature of the present invention, as the cutter-bar may be engaged in any suitable holder in any desired manner. However, the holder D', as shown in the drawings, is held in the guides or ways of the tilting frame by means of plates d', bolted thereto, as shown, the tilting frame being preferably provided with lateral flanges B², forming said ways and to which said plates are fulcrumed. The cutter-bar D is shown engaged with the holder D' by means of a plate D³, bolted to the holder, as by bolts d². Upon the upper surface or bed B' of the tilting frame B is supported a post F, toward the top of which is engaged an arm G, projecting forward and against the cutter-bar to form a support for the upper end of the cutter-bar to prevent the cutter-bar from springing away from the work. This arm G is made adjustable upon the post in any suitable manner, as by means of an encircling sleeve G' and binding-screw G². The forward end G³ of the arm G has an adjustable connection therewith in any suitable manner, as by means of an adjusting-nut g, having a threaded engagement upon the forward portion G³ of the arm, the nut being held in the adjacent end of the arm G by means of a binding-screw g'. Upon the upper surface or bed B' of the tilting frame is also engaged a bearing-plate b⁸, supporting a brace or bearing b' against the rear of the cutter-bar, so that the bar is braced adjacent to the bed of the machine and thereabove in a firm and effectual manner. The post F is made adjustable upon the tilting frame B in any suitable manner. To this end the upper surface

or bed B' of the tilting frame may be formed with elongated slots, (indicated in Fig. 4 at b^2 and in cross-section in Fig. 7,) through which the base of the post is bolted, as indicated at b^3 . The bearing-plate b may also be
 5 adjusted in a similar manner by means of bolts b^4 , engaged in a groove b^5 in the bed B'.

H represents the usual lever for forcing the cutter to the work, said lever being provided with an operating-rod H' and hand-wheel H². The tilting table may be adjustably connected with said lever by means of a rod J, connected with the lever and jointedly connected with a threaded bar J', as shown at j , the threaded portion J' being engaged with an adjacent
 15 portion of the tilting frame and provided with a hand-wheel J². The bed B' of the tilting frame is cut away, as indicated at B³, for the passage of the lever H. We prefer to provide the frame B with a scale, (shown at K,) the main frame being provided with an index-finger K' to facilitate the adjustment of the tilting frame in desired position.

L indicates a gear or other work in which a key-seat is to be cut, the work being located upon the bed of the fixed frame. By adjusting the position of the cutter-bar by means of the tilting frame it is evident that the operator can readily get a desired taper to the
 25 key-seat.

Our invention contemplates, moreover, means for automatically retracting the cutter-bar, so that it may clear the work on its return movement. To this end we provide, as shown in the accompanying drawings, a
 35 shaft M, having an eccentric or cam m at its upper end, said eccentric or cam being suitably engaged with the lever H, as at m' . The shaft M is engaged upon the machine in any suitable manner, as by means of a bracket N, bolted to the frame of the machine, the lever H being constructed with an orifice, as at h , to receive the eccentric m . The dotted line 10 10 in Fig. 10 denotes the longitudinal center line of the shaft, and it will be evident
 45 that when the said shaft is rotated upon its axis the eccentric will actuate the lever H accordingly. The shaft M may be engaged with the lever H in any suitable manner, as by means of a washer m^2 and nut m^3 upon the upper extremity of said shaft. Upon the lower end of the shaft is engaged a crank P, the crank being held in place in any suitable manner, as by a nut m^4 and intervening washer
 55 m^5 . With the outer end of said crank is engaged a connecting-rod Q', as by means of an intervening swivel Q, said connecting-rod being united to the ordinary shifting mechanism of the machine, as to a shifting-bar Q², connected with the belt-shifter Q⁴, as by a rod Q³, the bar Q² being actuated in any suitable manner by the movement of the cutter-bar. The parts, it will be understood, are so adjusted and worked that when the shifting
 65 mechanism is reversed the shaft M will be partially rotated accordingly, thereby actuating the lever H in a corresponding manner,

permitting the cutter-bar in its return movement to clear the work.

We prefer to make the bearing b' a continuous and removable bearing, said bearing being of sufficient length to be continuous through the entire length of cut for use in long deep hubs.

What we claim as our invention is—

1. The combination of a fixed frame, a tilting frame, formed with bearings engaged in the fixed frame, a shaft journaled in said bearings provided with a pinion intermediate said bearings, and a reciprocatory cutter provided with a rack meshing with said pinion, for the purpose set forth.

2. The combination with a fixed frame, bearings engaged in the lower portion of said frame, a tilting frame having a jointed engagement upon said bearings, a shaft journaled in said bearings provided with a pinion, and a reciprocatory cutter actuated by said pinion, for the purpose set forth.

3. The combination of a fixed frame a tilting frame provided with a bed, a reciprocatory cutter engaged with said tilting frame and movable therewith, and an adjustable brace-arm supported upon the bed of the tilting frame adjacent to the cutter, substantially as set forth.

4. The combination of a fixed frame, a tilting frame provided with guideways, a reciprocatory cutter-bar engaged with said ways and movable with the tilting frame, said tilting frame provided with an adjustable brace-arm adjacent to the cutter-bar, for the purpose set forth.

5. The combination of a fixed frame, a tilting frame, a cutter-bar carried by the tilting frame and movable therewith, and a brace for the cutter supported upon the tilting frame above the bed of the tilting frame and toward the upper end of the cutter-bar, for the purpose set forth.

6. The combination of a fixed frame, a tilting frame, a reciprocatory cutter carried by said tilting frame and movable therewith, a support located upon the tilting frame, and a brace for the cutter carried by said support, for the purpose set forth.

7. The combination of a fixed frame, a tilting frame, a reciprocatory cutter, an adjustable support upon the bed of the tilting frame, and an adjustable brace for the cutter carried by said support, for the purpose set forth.

8. The combination with a fixed frame, of a tilting frame, a reciprocatory cutter, a brace adjacent to the bed of the tilting frame, and an additional brace for the cutter carried by the tilting frame above the first-mentioned brace, for the purpose set forth.

9. The combination of a fixed frame, a tilting frame, a reciprocatory cutter-bar carried by said tilting frame and movable therewith, and means to adjust the position of the tilting frame, for the purpose set forth.

10. The combination of a fixed frame, a tilt-

ing frame, a reciprocatory cutter, a lever to force the cutter to the work, and an adjusting device connected with said lever, for the purpose set forth.

5 11. In a key-seat-cutting machine, the combination of a frame, a reciprocatory cutter, a lever, means to force the cutter to the work, reversing mechanism, and a partially-rotatable shaft provided with an eccentric or cam
10 engaged with said means, said shaft actuated by the reversing mechanism, substantially as set forth.

12. In a key-seat-cutting machine, the com-

bination of a frame, a reciprocatory cutter, a lever to force the cutter to the work, re- 15
versing mechanism, and a partially-rotatable eccentric or cam connected with said lever and automatically actuated by the shifting mechanism, substantially as set forth.

In testimony whereof we sign this speci- 20
fication in the presence of two witnesses.

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HENRY E. MORTON.

Witnesses:

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