

(No Model.)

M. MORTON.

KEY SEAT AND GEAR CUTTING MACHINE.

No. 333,324.

Patented Dec. 29, 1885.

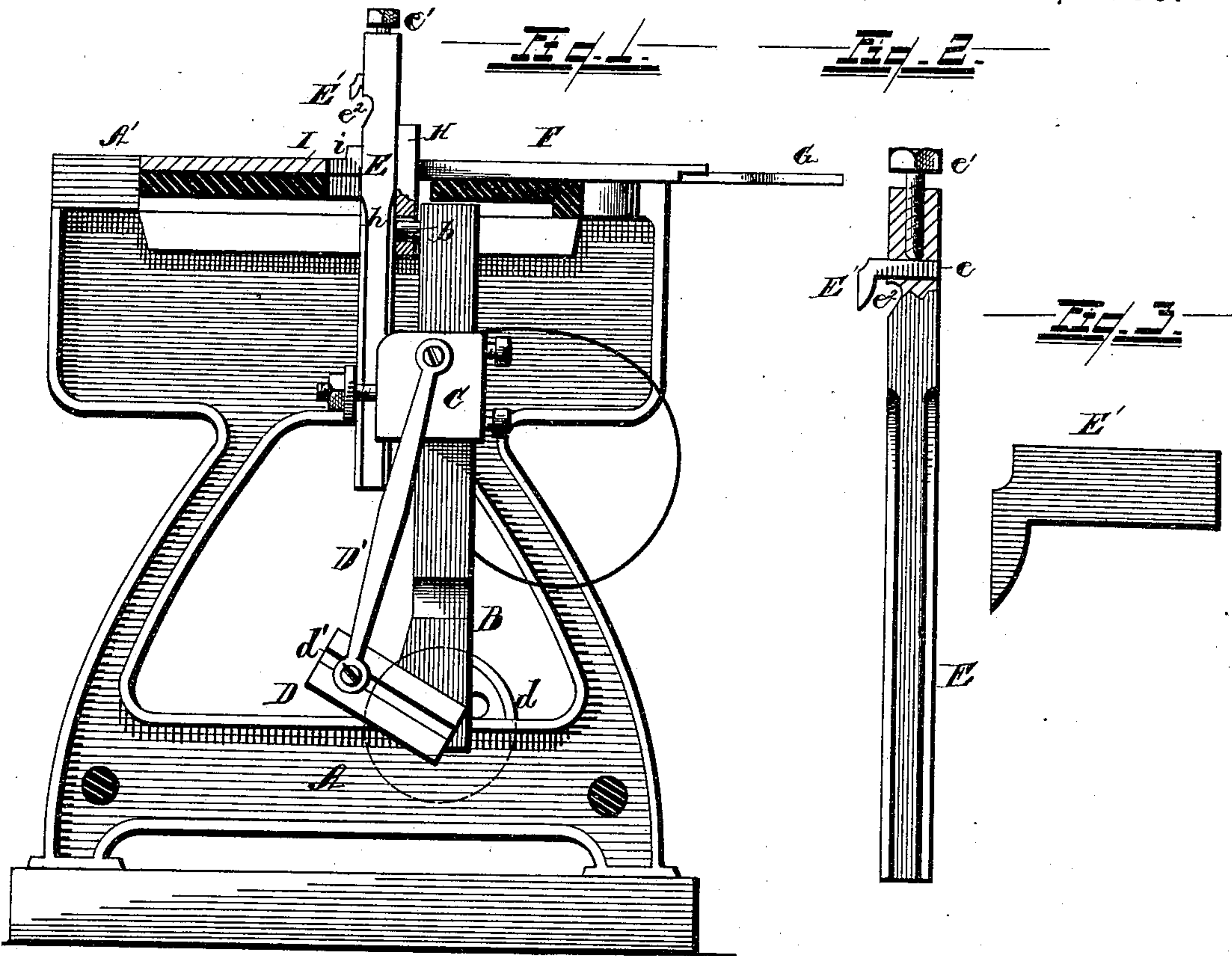
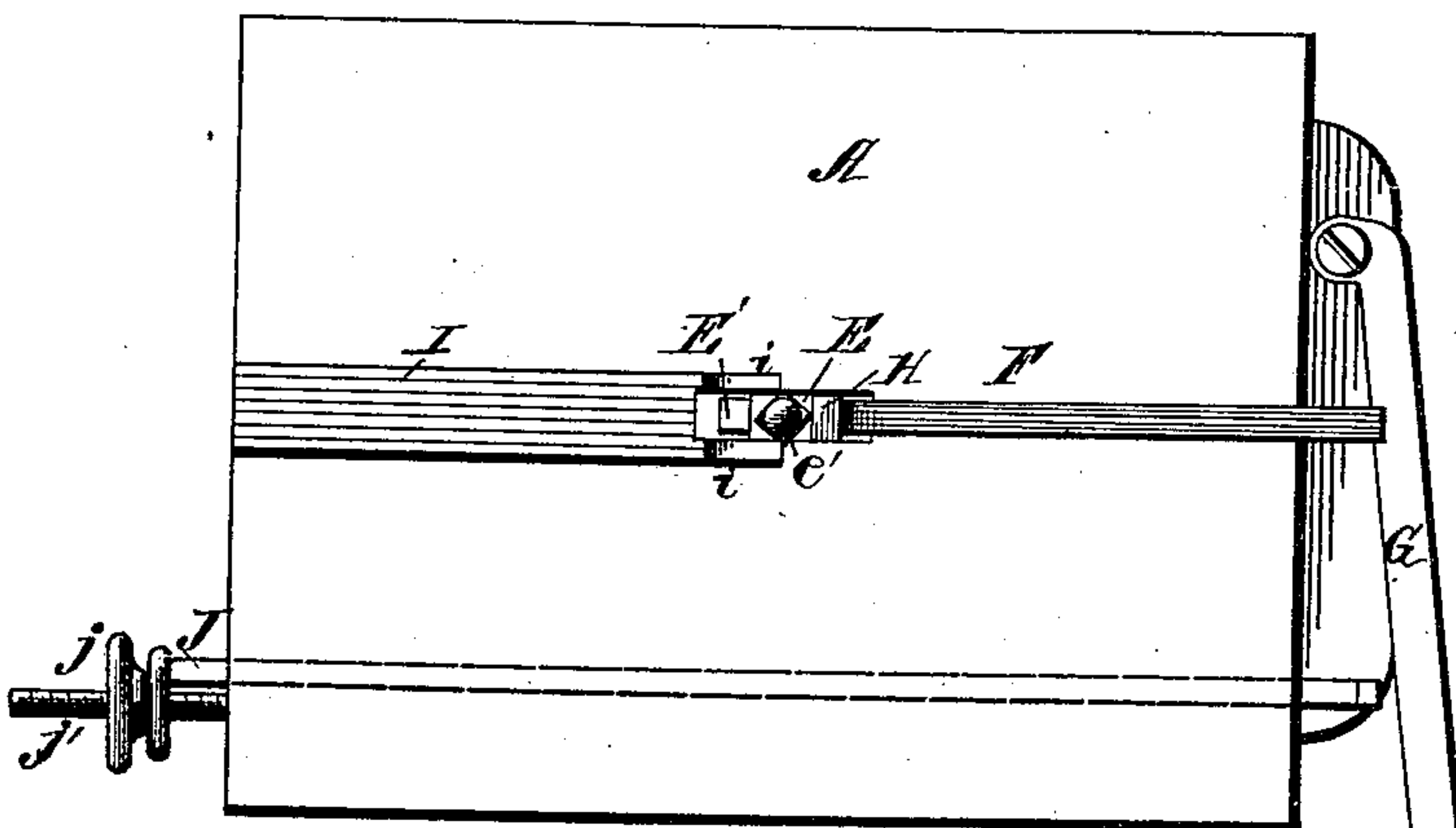


Fig. 1.



WITNESSES

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# UNITED STATES PATENT OFFICE.

MATTHEW MORTON, OF ROMEO, MICHIGAN.

## KEY-SEAT AND GEAR CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 333,324, dated December 29, 1885.

Application filed August 2, 1884. Serial No. 139,499. (No model.)

*To all whom it may concern:*

Be it known that I, MATTHEW MORTON, of Romeo, county of Macomb, State of Michigan, have invented a new and useful Improvement in Key-Seat and Gear Cutter Machines; and I 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 pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improved key-seat and gear cutter, and is designed more especially as an improvement upon a device for which Letters Patent were granted me for the United States, No. 303,178, August 5, 1884.

The objects of my invention are mainly, first, to provide an improved cutter-bar; second, to provide an improved bearing more effectually to force the cutter-bar to its work, and, third, to provide improved means for adjusting the cutter to the work.

My invention consists, therefore, in the combinations of devices and appliances hereinafter specified, and more particularly pointed out in the claims.

As illustrated in the drawings, Figure 1 is a side elevation of a device embodying my invention, showing parts in section. Fig. 2 is a separate view of the cutter-bar. Fig. 3 is a separate view of the cutter. Fig. 4 is a plan view of the device.

A represents any suitable supporting-frame.

A' is the top of table.

D is a crank-arm of the driving-shaft.

d is the driving gear or pulley.

B is an oscillating guide arranged to oscillate from the center of the crank-shaft.

C is a sliding head engaged upon said guide, said head carrying the cutter.

D' is a pitman connecting the sliding head with the crank-arm D through an intervening sliding cross-head, d'.

E is my improved cutter-bar. This cutter-bar is provided at its upper end with a cutter, E', the bar being provided with a suitable orifice at e to receive the cutter, which is held in place by a set-screw, e'. I prefer also to cut away the bar underneath and adjacent to the cutter, as at e<sup>2</sup>, to receive the shavings as the cutter operates, so as not to obstruct the operation of the cutter.

The cutter, it will be observed, is easily removable, and therefore cutters of any desired width may be readily located in the cutter-bar for different kinds of work, the bar itself answering for all purposes. The cutter-bar may retain its position in the sliding head, different cutters simply being located therein for different kinds of work.

To force the cutter-bar forward to its work, I provide a sliding bar, F, located in the rear of said bar upon the table.

G is a lever pivoted at one end to the table-bed and bearing against said sliding bar, the arrangement being such that the bar may be forced forward by said lever. Instead, however, of engaging the sliding bar F directly against the cutter-bar, I prefer to interpose a bearing, H, of sufficient length to afford a suitable bearing against the cutter-bar. Six inches or so I have found to be a very suitable length. This bearing may be located between the sliding bar and the cutter-bar in any suitable manner—as, for instance, it may be provided with a suitable orifice at h, the oscillating guide being provided with a slide, b, upon which said bearing may be hung. It is obvious that it should be located high enough to be out of the reach of the sliding head at its upward stroke.

Where a small bearing is used at the back of the cutter, as when the sliding bar F itself bears against the cutter-bar, I have found that said bearing is apt to wear, in consequence of which the cut is made untrue; but by the use of the long bearing, such as I have described, this wearing of the tool is prevented, and the cut never becomes untrue.

I is an adjustable guide located upon the face of the table, provided with upwardly-extended ends i and i', located upon each side of the cutter, for centering the work about the same and for determining the depth of cut and insuring the kerf being always perfectly straight from the center, as the work can be more accurately centered thus than from the outside.

In order to regulate and adjust the feed of the cutter upon the work, I provide the frame or bed with a sliding bar, J, adapted to have contact with the lever G at one end and at the other to have contact with the thumb-nut j upon the screw j'. It is obvious that by turning the thumb-nut as desired after each stroke of the cutter the bar J may slide forward in a



corresponding measure, permitting the lever G to have a little longer stroke, and thereby crowding the bar F a farther distance forward, so as to adjust the cutter after each stroke forward to the work. By this mechanism I am enabled to cut gears and keyways of any desired length and width.

The operation of the device will now be understood. The reciprocation of the cutter-bar engaged with the sliding head upon the guide D, made to oscillate from the center of the crank-shaft, is evident, said head being engaged with the crank-arm by an intervening pitman. While the cutter-bar is thus actuated vertically from said crank-shaft, it is also actuated and regulated by means of the lever G and intervening bar, F, to engage it upon the work centered about it, the forward stroke of said lever being controlled, as seen, by the bar J, made adjustable to control the feed of the cutter upon the work.

What I claim is—

1. The combination, with a cutter-bar constructed with an orifice,  $e$ , and cut away, as at  $e^2$ , of the cutter E' and set-screw  $e'$ , the construction being such that various sizes of cutters may be located in said bar and held in place by said screw, substantially as described.

2. A cutter-bar provided with a removable cutter, said bar cut away adjacent to the cutter, substantially as described.

3. The combination of a supporting-frame, a top or table, a horizontally-sliding bar on the table, and the cutter-bar carrying a cutter, with an extended bearing interposed between the inner end of the sliding bar and the cutter-

bar, and against which bearing the sliding bar abuts to press the cutter forward to its work, substantially as described.

4. The combination, with the oscillating guide provided with a sliding head and a slide,  $b$ , of a cutter and an extended bearing, H, located in rear of said cutter and having an orifice,  $h$ , within which the slide  $b$  works to reciprocate the bearing by the action of the oscillating guide, substantially as described.

5. In a gear or keyway cutter, the combination, with the oscillating guide provided with a sliding head, of a cutter engaged with said head, an extended bearing in the rear of the cutter, a sliding bar, F, and lever G, arranged to operate substantially as and in the manner described.

6. In a gear or keyway cutter, the combination, with the oscillating guide provided with a sliding head, of a cutter and extended bearing located in the rear of the cutter, and mechanism operating upon said bearing to crowd the cutter to its work, substantially as described.

7. In a keyway or gear cutter, a screw and thumb-nut and sliding bar J, engaged at one end with said thumb-nut to limit the movement of the cutter in a forward direction, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

MATTHEW MORTON.

Witnesses:

DWIGHT N. LOWELL,  
SEWARD L. MERRIAM.