(No Model.) 5 Sheets—Sheet 1.

M. MORTON.

COMBINED PORTABLE PLANER AND KEY SEATING MACHINE.

No. 453,653. Patented June 9, 1891.

Fig. 1.

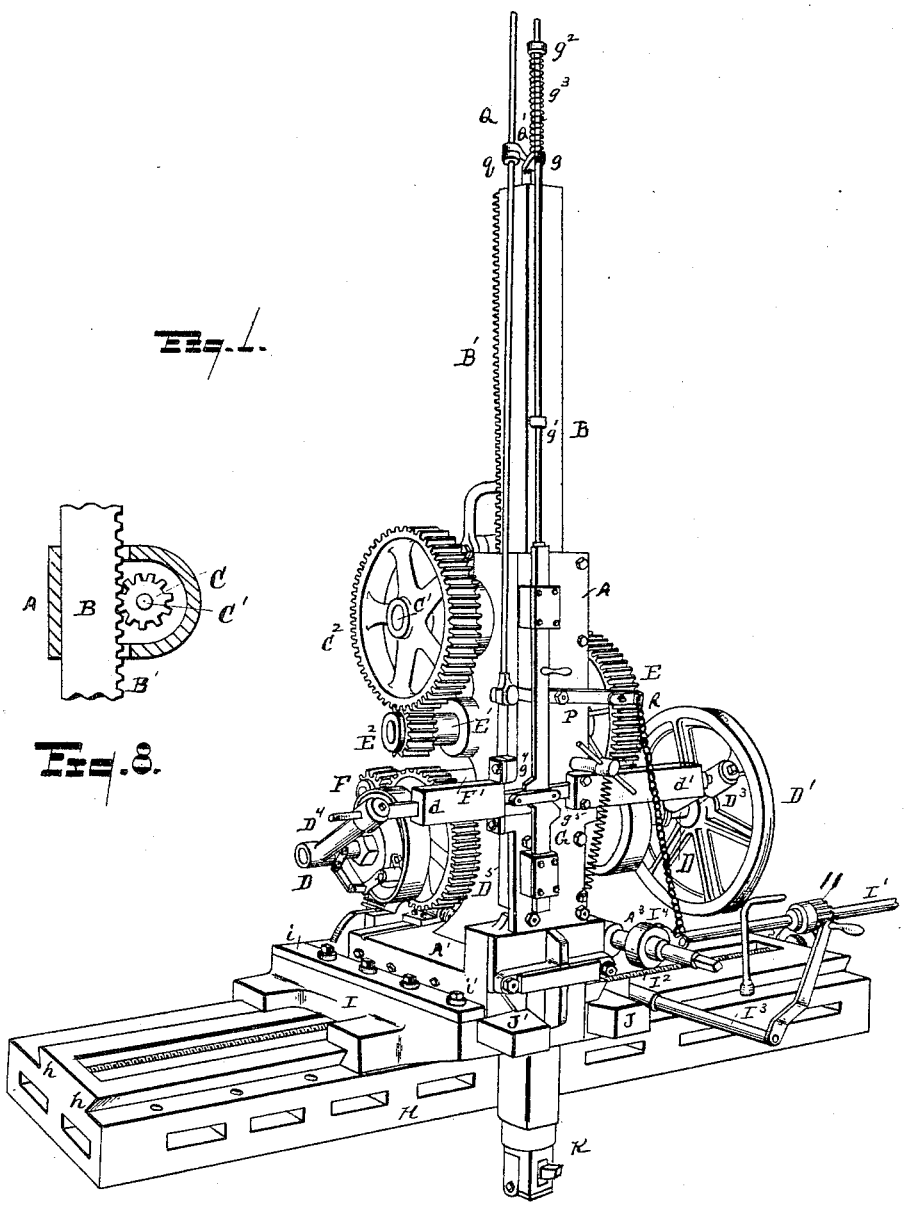

Fig. 8.

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Fig. 2.

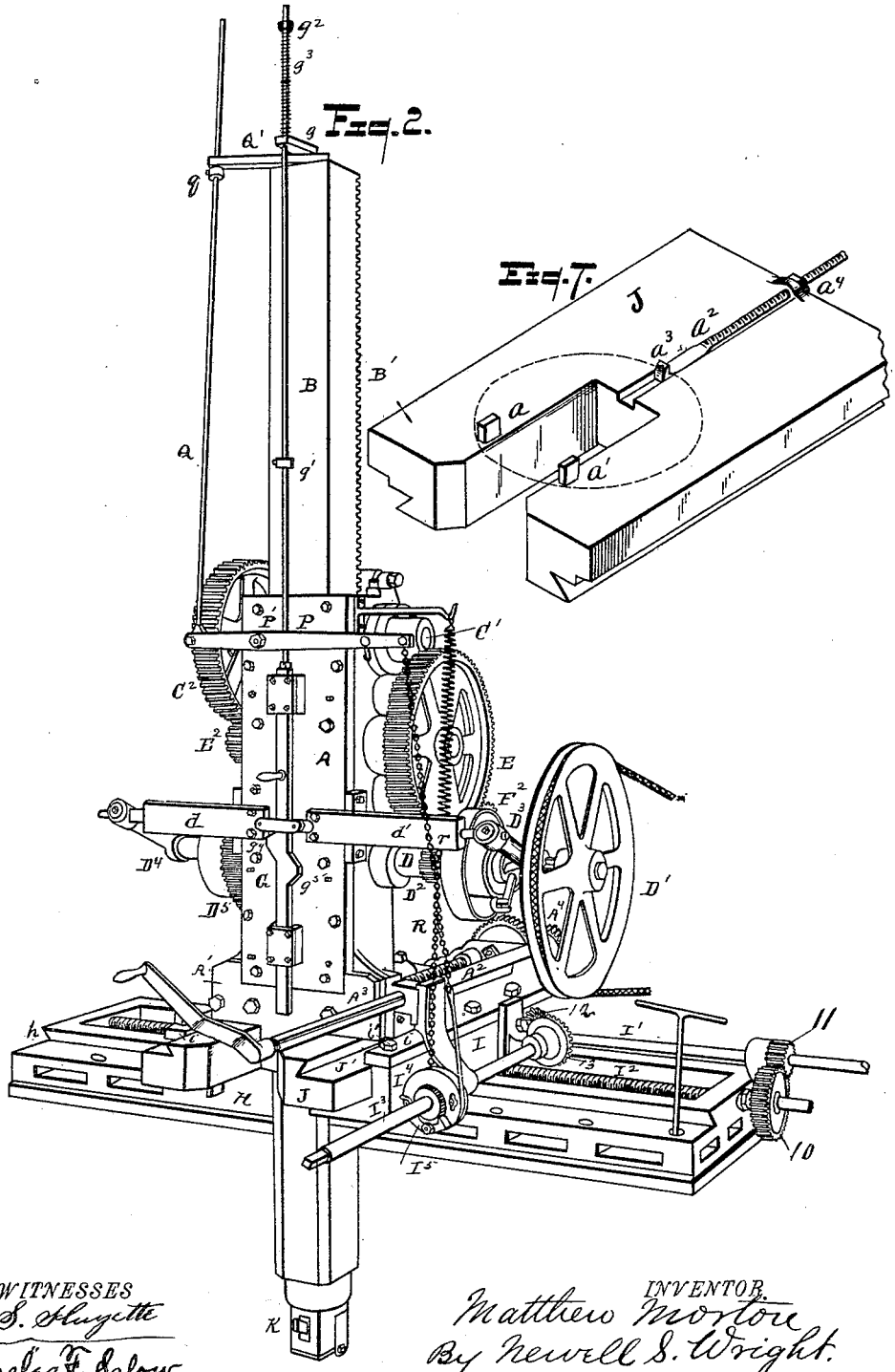

Fig. 1.

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Fig. 3.

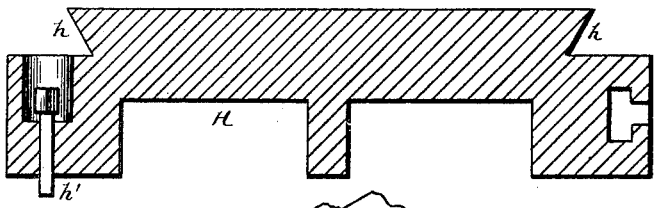


Fig. 4.

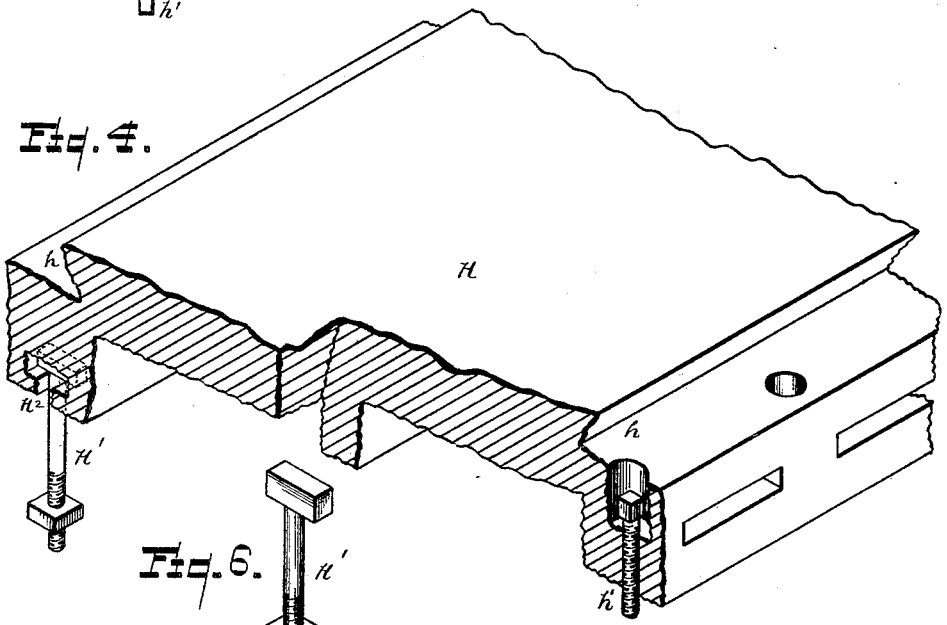


Fig. 6.

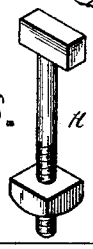
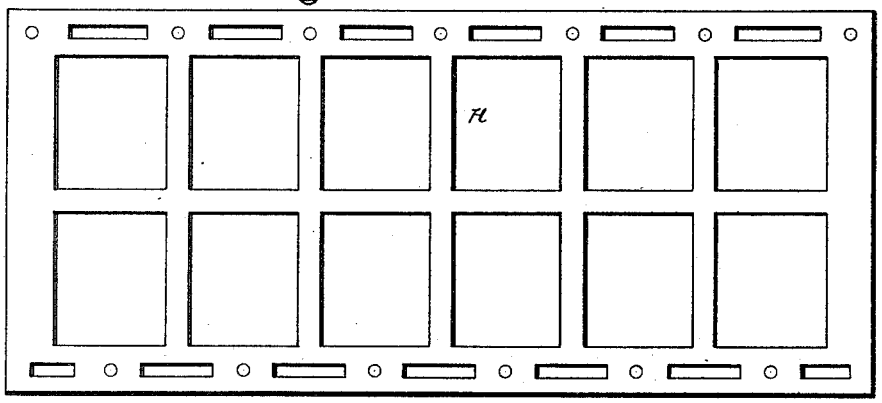


Fig. 5.



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COMBINED PORTABLE PLANER AND KEY SEATING MACHINE.

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Fig. 10

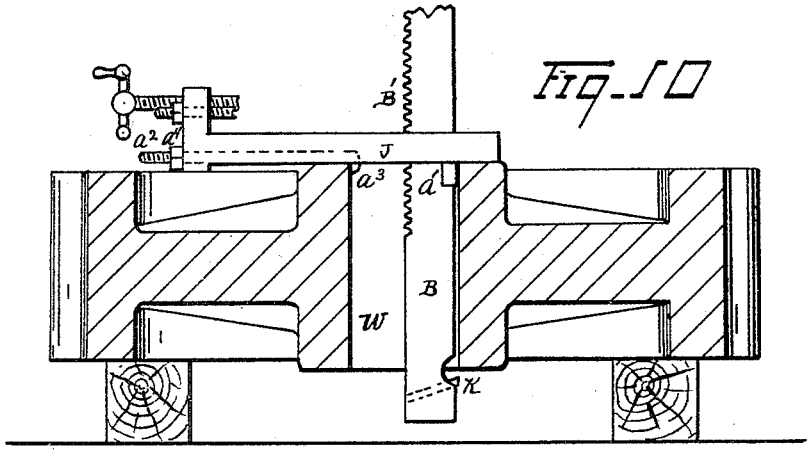
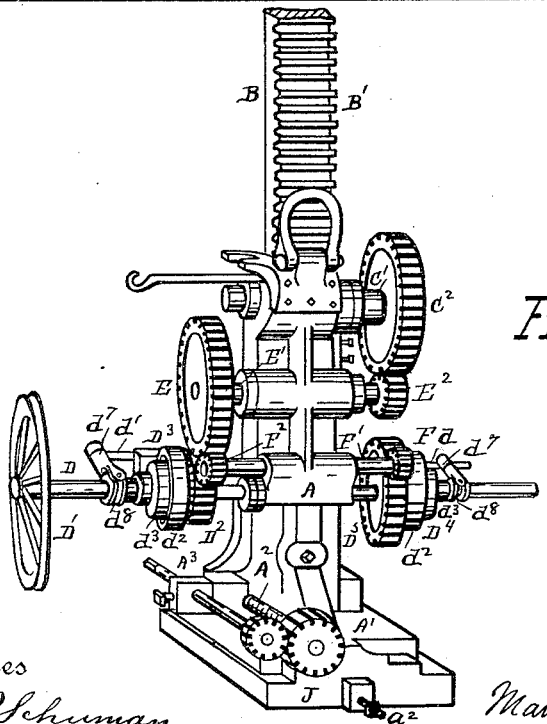


Fig. 9



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COMBINED PORTABLE PLANER AND KEY SEATING MACHINE.

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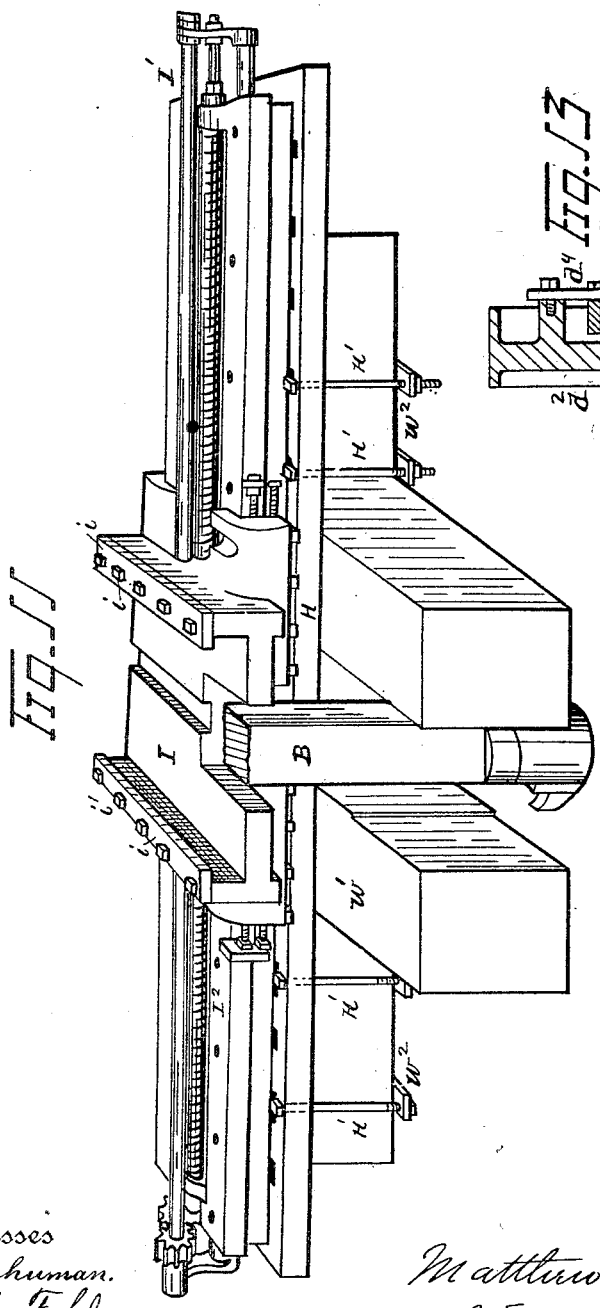

FIG. 1.

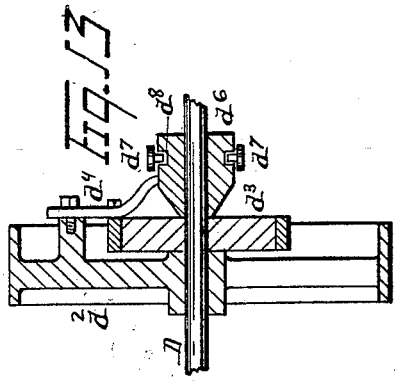

FIG. 3.

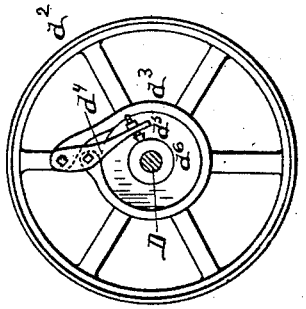

FIG. 2.

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UNITED STATES PATENT OFFICE.

MATTHEW MORTON, OF ROMEO, MICHIGAN.

COMBINED PORTABLE PLANER AND KEY-SEATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 453,653, dated June 9, 1891.

Application filed October 22, 1889. Serial No. 327,778. (No model.)

To all whom it may concern:

Be it known that I, MATTHEW MORTON, a citizen of the United States, residing at Romeo, county of Macomb, State of Michigan, have invented a certain new and useful Improvement in a Combined Portable Planer and Key-Seating Machine; 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 appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to a combined portable planer and key-seater; and it consists of the combination of devices and appliances hereinafter described and claimed, and more particularly illustrated in the accompanying drawings, in which—

Figure 1 is a view in perspective of a machine embodying my invention, looking from the left of the machine. Fig. 2 is a view of the same in perspective, looking from the right of the machine. Fig. 3 is a vertical cross-section of the bed-plate. Fig. 4 is a view, partly in perspective and partly in section, of said bed-plate. Fig. 5 is an inverted plan of the bed-plate. Fig. 6 is a view of one of the fastening-bolts. Fig. 7 is an inverted plan of the base of the key-seater frame, showing the devices for centering the work. Fig. 8 is a detail view showing the pinion which drives the cutter-bar. Fig. 9 is a view showing the rear of the machine. Fig. 10 is a view showing the work engaged with the base of the machine when used as a key-seat cutter. Fig. 11 shows the work engaged with the bed-plate of the machine when used as a planer. Fig. 12 is a detail view of the clutches in side elevation. Fig. 13 is a view of the same in cross-section.

The desirability of having a combined and portable planer and key-seat cutter which may be conveniently and readily moved to the work is evident.

I carry out my invention as follows:

A represents the frame of the machine. A′ is its base.

B is a cutter-bar, which I prefer to construct with a rack-bar B′, driven by a pinion C, mounted on a shaft C′, journaled on said frame. I do not limit myself to any specific mechanism for driving the said pinion, but find the following very satisfactory and suitable.

D is a driving-shaft provided with a driving-pulley D′, Fig. 2, a pinion D^2, shifting friction-clutch devices D^3 D^4 of any desired construction, and a gear D^5. The pinion D^2 when the clutch D^3 is operative meshes with a gear E upon a shaft E′, provided with a pinion E^2, meshing in turn with a gear C^2 on the shaft C′. When the clutch D^4 is operative, the pinion D^2 is out of gear, and the gear D^5 is thrown into engagement with a pinion F on a shaft F′, provided with a gear F^2, meshing when in operation with the gear E, Fig. 2.

The shaft D, it will be understood, has a movement in the direction of its axis, whereby either the pinion D^2 may be made to mesh with the gear E or the gear D^5 to mesh with the pinion F.

To shift the clutches automatically, they are connected by bars d d' upon a cam-faced shifting-bar G, having a sliding movement upon the frame of the machine. A tripping-arm g is engaged upon the cutter-bar, and the shifting-bar is provided with tripping-heads, as at g' g^2, and with a spring g^3. As the cutter-bar moves in one direction, the arm g engages one of the tripping-heads and throws the bar in a corresponding direction, the cam-faces of the bar, as shown at g^4 g^5, throwing the bars d d' accordingly.

H denotes a bed-plate provided with dove-tailed ways, as shown at h, and also with adjusting-screws properly arranged, as shown at h', by which the bed-plate may be leveled up upon the work, as may be required. (See Fig. 4.)

H′ are T-headed bolts engaged in suitable perforations H^2 in the bed-plate for engaging the bed-plate upon the work.

I, Figs. 1, 2, and 11, represents a saddle having a dovetailed engagement upon the bed-plate. I^2 is a feed-screw connected therewith.

J, Fig. 1, is the supporting-plate of the key-seater, having an adjustable engagement in the saddle, the saddle being provided with plates i, bolted thereupon, as shown at i', to

hold the said bed-plates J. When this plate is to be removed from the saddle, the bolts i' are simply loosened. Upon this bed-plate J the base A′ of the frame A has a movable engagement, the one having a dovetailed engagement with the other, as shown at J′.

To feed the machine to the work in planing, the base of the frame A is provided with a feed-screw A^2, geared with a shaft A^3, as shown at A^4, whereby the machine may be moved to the work upon the bed-plate J. To move the machine at right angles to the movement above described, the bed-plate H is provided with a feed-screw I^2, engaging the saddle I. The said feed-screw has a gear 10, which meshes with a gear 11, secured to a shaft I′, and this shaft has a gear 12, which is actuated by a gear 13, secured to the operating-shaft I, journaled in saddle I.

For a key-seat-cutting machine the bed-plate J is simply removed from the saddle I. In this case the cutter-bar is provided with a suitable cutting-tool K. When, however, the machine is used as a planer, the cutter-bar is provided with a cutter-head provided with a suitable cutter. A universal cutter-head especially adapted to this purpose forms the subject-matter of a separate application filed of even date herewith.

It will be observed that the machine is arranged to have a pulling cut, so that the work is hugged toward the machine, consequently removing the strain from the connecting-bolts.

To center the work I prefer to provide the base-plate J with centering lugs or points a a', Fig. 7, and also with a rod a^2, having a shoulder a^3 and a tightening-nut a^4.

The bore of a hub centered by this mechanism is indicated in Fig. 7 in dotted lines.

The driving-gears are so speeded as to retract the cutter-bar to re-engage the work with rapidity.

Where it is desired to feed the planer on the bed-plate J automatically, the shaft I^3 may be provided with a pulley I^4, having a pawl and ratchet device I. To this pulley is connected a lever P, fulcrumed to the frame, as shown at P′. The end of this lever is provided with a rod Q, provided with a tripping-head q, the cutter-bar being provided with an additional tripping-arm Q. The lever is connected to the pulley I^4 by means of a chain or cable R, one end of which may have a stationary engagement, as at r, the cable being engaged with the pulley. It will be evident that when the lever is tripped the shaft will be rotated accordingly.

In Fig. 10, W denotes the work to which the machine is engaged when employed as a key-seater. In Fig. 11 the work is shown at W. The work is held to the machine when used as a planer by means of the bolts H′, engaging the bed-plate H and cross-pieces W′. If the work is even on its upper surface, the adjusting-screws h' need not be employed.

While I do not limit myself to any particular friction-clutches D^3 D^4, I find a clutch patented to Albert H. Bean, July 14, 1885, No. 321,941, and September 15, 1885, No. 326,091, very suitable, consisting, essentially, of a clutch-pulley d^2, located upon the shaft D, provided with a friction-band d^3, with which is engaged an operating-lever d^4, having an adjusting-stud d^5 and the cone d^6.

The bars d d', connecting the clutches, are united to riders d^7, engaged in a groove d^8 on the cone.

What I claim as my invention is—

1. In a combined portable planer and key-seat cutter, the combination, with a bed-plate for engaging the work, of a traveling saddle engaged therewith, a traveling supporting-plate engaged with the saddle, and a frame engaged upon the supporting-plate, said frame provided with a reciprocatory cutter-bar, substantially as described.

2. In a combined portable planer and key-seat cutter, the combination, with a bed-plate for engaging the work, of a traveling saddle engaged therewith, a traveling supporting-plate engaged with the saddle, and a frame engaged upon the supporting-plate, said frame provided with a reciprocatory cutter-bar and said supporting-plate separate from the saddle, substantially as described.

3. In a combined portable planer and key-seat cutter, the combination, with a bed-plate for engaging the work, of a traveling saddle engaged therewith, a frame movably engaged upon the saddle, provided with a reciprocatory cutter-bar, and feed-screws to move the frame and the saddle, substantially as described.

4. In a combined portable planer and key-seat cutter, the combination, with a bed-plate for engaging the work, of a saddle provided with a reciprocatory cutter-bar and having a sliding engagement upon the plate, said plate provided with adjusting-screws for leveling the same upon the work, substantially as described.

5. In a combined portable planer and key-seat cutter, the combination, with a bed-plate, of a saddle having a sliding engagement thereupon, a supporting-plate movably engaged upon the saddle, and a frame movably engaged upon said plate, said plate provided with a reciprocatory cutter-bar, substantially as described.

6. The combination, with the supporting-plate, of a frame movably engaged thereupon, a reciprocatory cutter-bar engaged with said frame, said plate provided with lugs a a', and a tightening-rod a^2 for centering the device upon the work, substantially as described.

7. The combination, with a supporting-frame, of a reciprocatory cutter-bar and automatic shifting mechanism for reversing the movement of said gear to impart alternately up-and-down movement to said cutter-bar, substantially as described.

8. In a combined portable planer and key-seat cutter, the combination, with a bed-plate, of a saddle having a movable engagement thereupon, a frame provided with a reciprocatory cutter-bar engaged upon the saddle, a feed-screw to move the saddle upon said bed-plate, and an automatic shifter to operate said feed-screw, substantially as described.

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

MATTHEW MORTON.

Witnesses:
N. S. WRIGHT,
CHAS. F. SALOW.