J. Richards,

Mortising Machine.

No. 46,391. Patented Feb. 14, 1865.

Fig. 1.

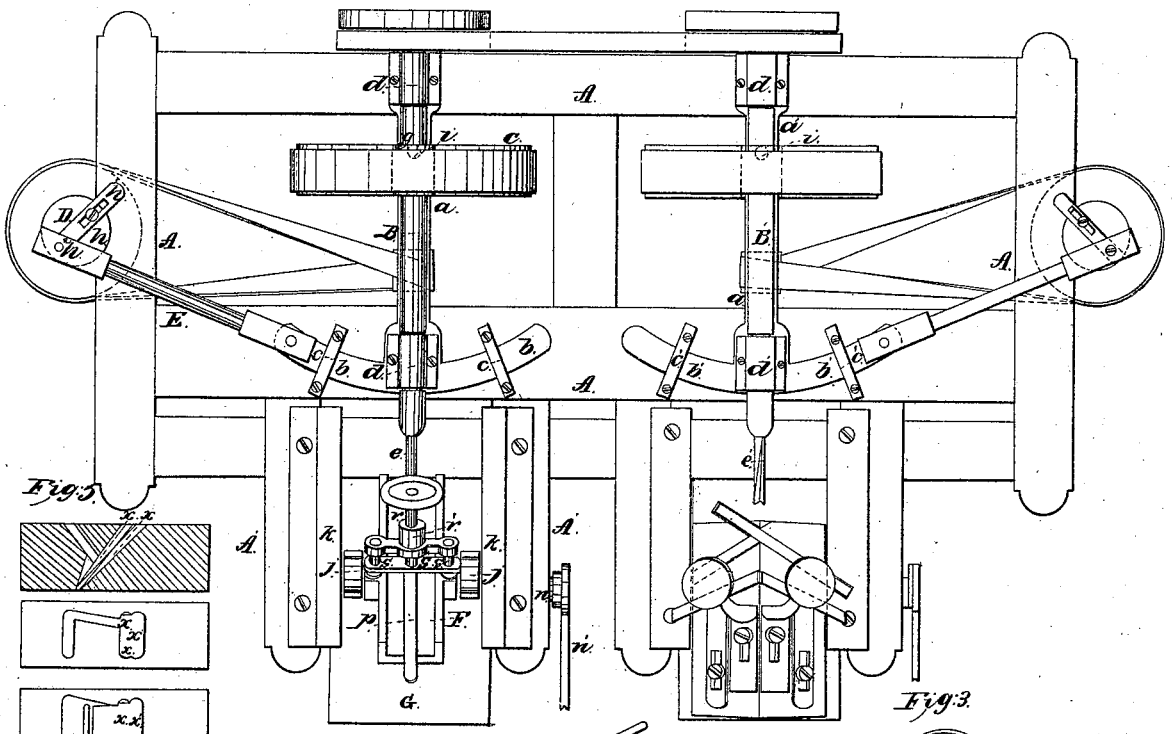


Fig. 3.

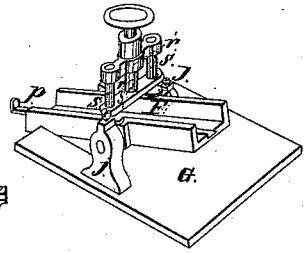


Fig. 5.

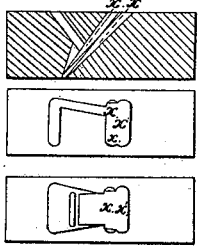


Fig. 2.

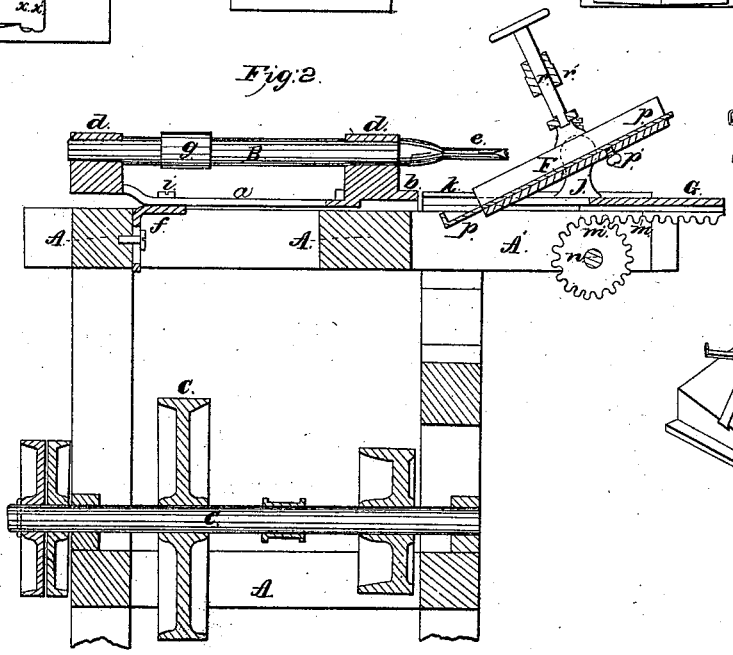
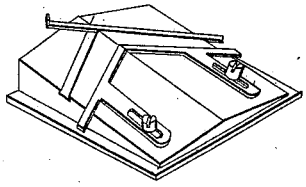


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN RICHARDS, OF COLUMBUS, OHIO.

IMPROVEMENT IN MACHINES FOR MORTISING PLANE-STOCKS.

Specification forming part of Letters Patent No. **46,391**, dated February 14, 1865.

To all whom it may concern:

Be it known that I, JOHN RICHARDS, of Columbus, Franklin county, State of Ohio, have invented a new Machine for Cutting Throats in Plane-Stocks; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a plan view of my improved machine for preparing the stocks for finishing. Fig. 2 is a vertical transverse section taken centrally through that part of my machine which forms the subject of this application. Fig. 3 is a perspective view of the adjustable inclined bed for supporting the plane-stocks during the operation of opening the throats. Fig. 4 is a perspective view of the compound inclined bed for holding the stocks during the operation of forming the cheeks therein. Fig. 5 represents the manner of cutting the plane-stocks.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel improvements in machinery for cutting throats in plane-stocks and producing the throats in such manner they can be readily dressed and finished with a chisel or other well-known tool.

The object of my invention is chiefly to produce the throats in plane-stocks by means of rotating and vibrating cutters in conjunction with contrivances for holding and directing the stocks to said cutters, according to the angle it is desired to give the bed-line, wedge-line, or front-line.

Another object of my invention is to support the plane-stocks upon inclined beds in such manner that the necessity for adjusting the cutters to change the angle of cut is avoided, as will be hereinafter described.

To enable others skilled in the art to make and use my invention, I will describe its construction and operation.

In the accompanying drawings, Fig. 1, I have represented two machines combined and supported upon a single frame, A. One of said machines is intended for producing the cheeks of the plane-throats and shall form the subject of a separate application for a patent, inasmuch as the supporting-bed, adjustable guides, and clamps differ essentially from the contrivances which are used for supporting, clamping, and guiding the stocks up to the work of cutting the bed-line, wedge-line, and front-line.

The augers which are used in the two above-mentioned machines are constructed and operated alike in both, as will be seen from the following description.

The frames upon which the auger-shafts B B′ are supported consist of transverse bars *a a′*, terminating at their forward ends in sectors *b b′*, which latter work in fixed guides *c c c′ c′* that are secured on top of the forward rail of the frame A, as clearly shown in Fig. 1. The auger-shafts B B′ are supported in bearing-boxes *d d d′ d′*, applied at the forward and rear ends of the respective frames, and the augers or bits *e e′* are inserted centrally into the ends of their respective shafts and confined in place in any suitable manner. The auger-frames B B′ are each pivoted at *i*, near their rear ends, to an adjustable bracket, *f*, which is secured to the back rail of the frame A in such manner that it can be set upward or downward, as may be required. It will be seen that the augers can receive two motions—one, a rotary motion in their journal-boxes, and the other a lateral vibrating motion about the centers *i i*. The former motion is communicated to the auger-shaft from a driving-pulley, C, which is secured to a driving-shaft, C′, arranged beneath the bed of the frame A, by means of a belt which passes over a small pulley, *g*, on said auger-shaft. The vibratory motion is imparted to the auger-frame from a vertical shaft, D, carrying on its upper end a circular disk, *h*, to which is applied an adjustable slide, *h′*, carrying on one end a vertical pin, h^2, which receives one end of a pitman-rod, E, that is pivoted at its opposite end to one extremity of the sector *b*. Motion is imparted to the shaft D from the driving-shaft C′, and simultaneously with the rotary motion of the auger it receives a lateral reciprocating motion, the speed of which should be regulated according to the rapidity of cutting.

By adjusting the wrist-pin h^2 toward or from the center of the disk *h* the length of lateral stroke of the auger can be increased or diminished at pleasure, and thus any desired width of opening can be made in the plane-stocks.

Two arms, A′ A′, project out from the front

rail of the frame A and support the inclined bed F, upon which the plane-stocks are secured and held in place during the operation of the auger in cutting the throats. This bed F is a rectangular trough, which is pivoted by means of trunnions projecting from its sides to two standards, *j j*, which are secured to a sliding bed-plate, G, as shown in Figs. 1, 2, and 3 of the drawings.

The plate G is guided up to and from the auger between the grooved jaws *k k*, which are secured upon the arms A′ A′, and this movement is made by means of a rack and pinion, *m m′*. The pinion *m′* is keyed to a rock-shaft, *n*, carrying on its outer end a lever, *n′*. In the bottom of the inclined bed F a strip of metal is fitted to work in a dovetail slot. This strip *p* has one end turned up, as shown clearly in Figs. 2 and 3, and, thus constructed, it forms a gage and stop for adjusting the plane-stocks properly before the auger. The thumb-screw *p′*, which is tapped through the bottom of the bed F, is used to fix the gage in position after it has been properly adjusted, so that any number of plane-stocks may be cut, and all cut accurately, without changing the position of the gage. This gage should be arranged in the middle of the bed or stock-holder and in a line with the axis of motion of the auger-frame, so that the full stroke of the auger will be divided equally on each side of a central line running through the stock-holder, and the axis of motion of the holding-bed F should be in a plane coinciding with the axis of the auger-shaft. By this arrangement the auger will always cut toward the center of motion of the holding-bed, and the wedge-line *x* and bed-line *x′*, Fig. 5, can be made by simply changing the angle of inclination of said holding-bed.

In order to secure the stocks firmly in place upon their inclined bed F, I employ a clamp, which may be constructed as shown in Figs. 1, 2, and 3, *r* being the clamping-screw, which is tapped through a cross-head, *r′*, that is secured to two studs, *s s*. On the lower end of the screw *r* a clamping-plate, *s′*, is applied, which can be elevated or depressed by turning said screw. This clamp is used to force the stocks down upon their bed, and to hold them securely in place during the operation of the auger.

By means of the inclined adjustable bed F and its rotary vibrating auger I am enabled to make the following cuts transversely across the plane-stocks: The bed-line, wedge-line, front line, throat bed-line, and front of throat, leaving the cheeks uncut.

In regard to the form of auger I will state that it should be constructed with cutting-edges on its end and also with cutters on its sides, so that as it penetrates the wood it will readily clear itself and leave a smooth surface on each side of the oblong slots, which are formed as above described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of an adjustable inclined stock-holder, F, with a boring-tool which receives a rotary motion and at the same time vibratory motion, substantially as described.

2. The construction of the stock-support F, in combination with the bed G and clamp *s′*, substantially in the manner and for the purpose set forth.

3. A gage, *p*, applied to the face of the stock-holder of a machine adapted for cutting the throats in plane-stocks, substantially as and for the purpose set forth.

4. The combination of the stock F, adjustable clamp *s*, and rotary auger, substantially as and for the purposes set forth.

Witness my hand and seal in the matter of my application for a patent for machinery for cutting throats in plane-stocks.

JOHN RICHARDS.

Witnesses:
R. T. CAMPBELL,
E. SCHAFER.