(No Model.) 4 Sheets—Sheet 1.

J. G. OETZEL.

DOVETAILING MACHINE.

No. 335,833. Patented Feb. 9, 1886.

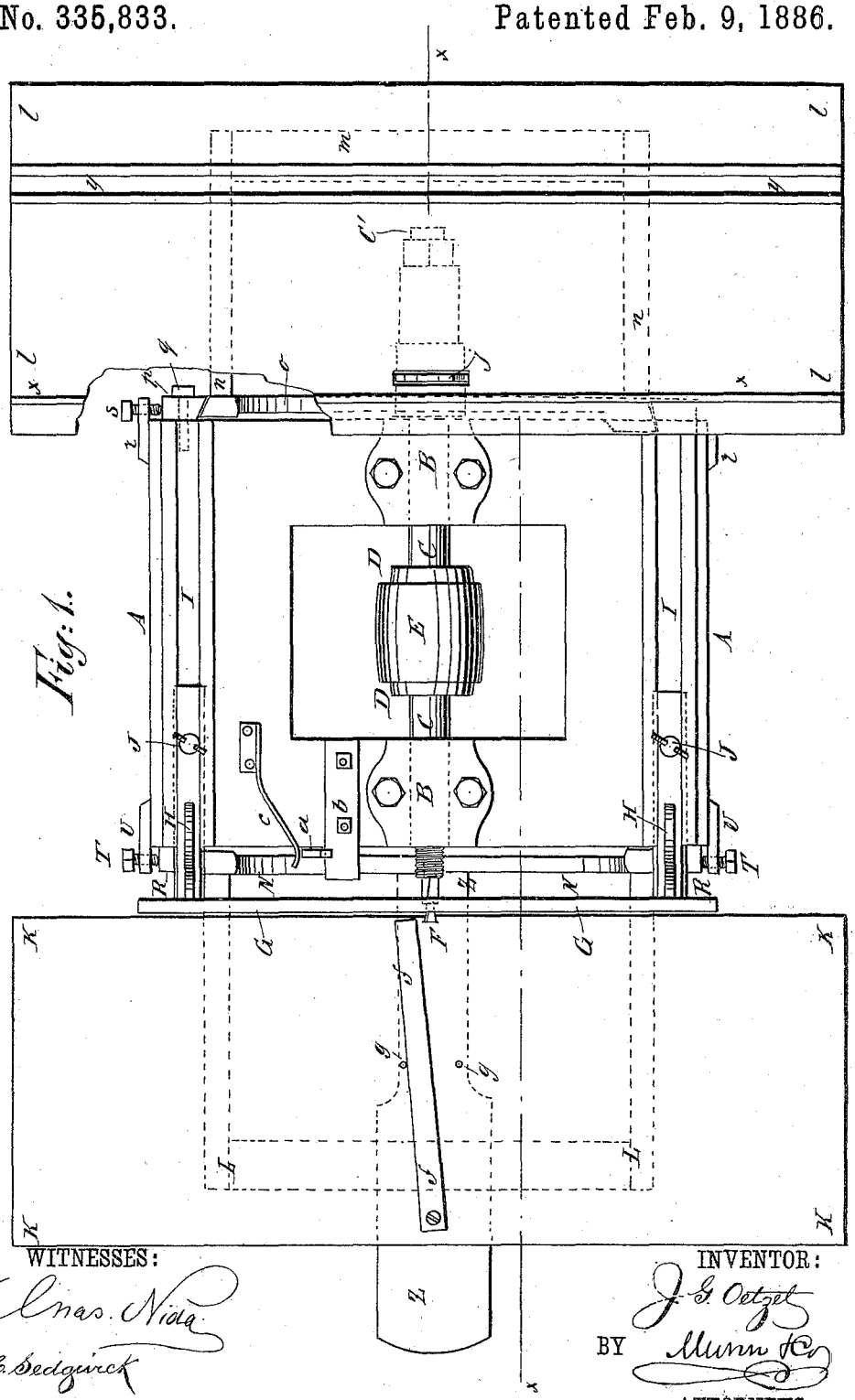

Fig. 1.

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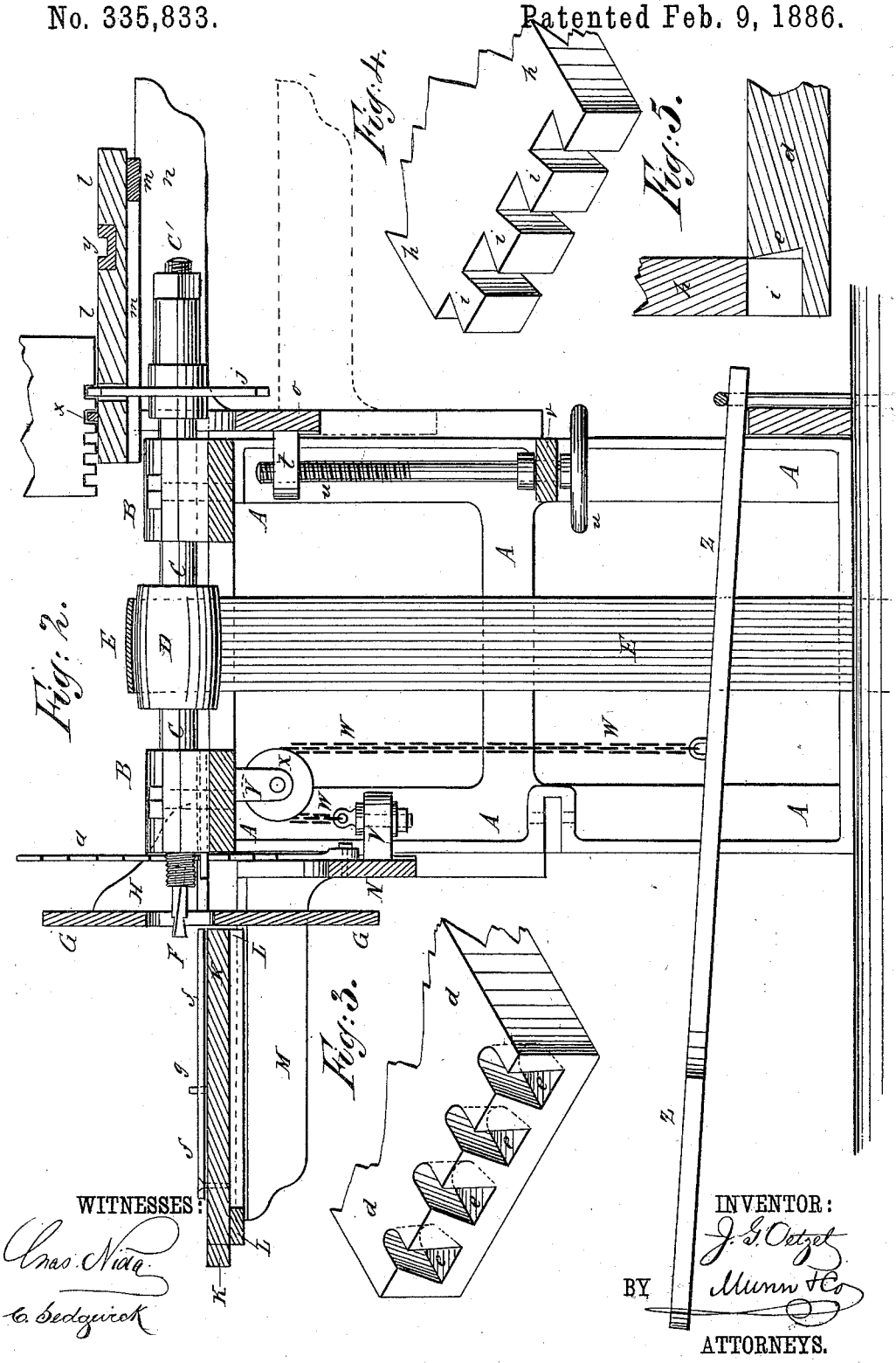

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DOVETAILING MACHINE.

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Fig: 6.

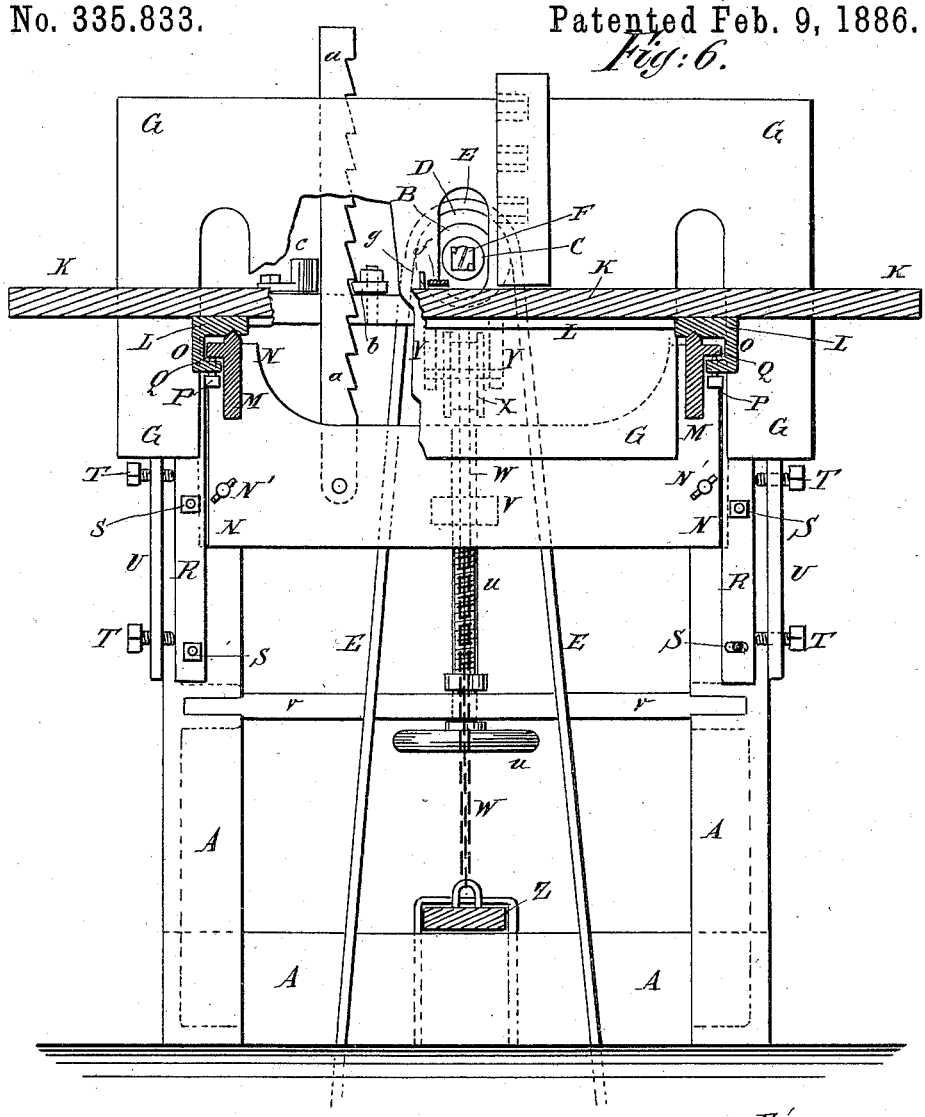
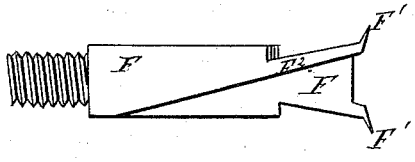


Fig: 7.



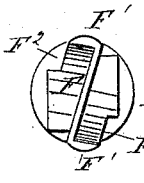


Fig: 9.

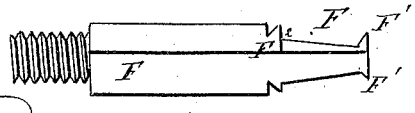


Fig: 8.

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DOVETAILING MACHINE.

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Fig: 10.

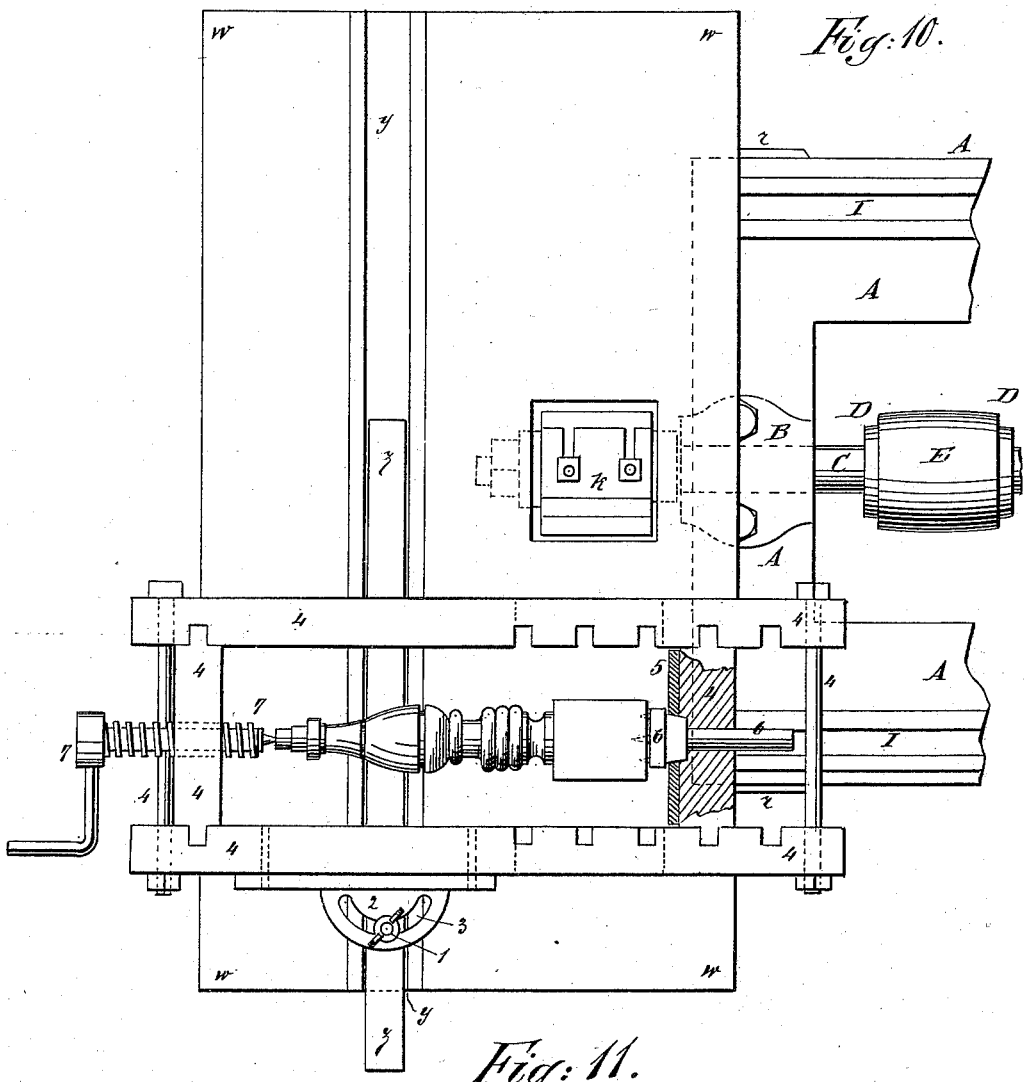
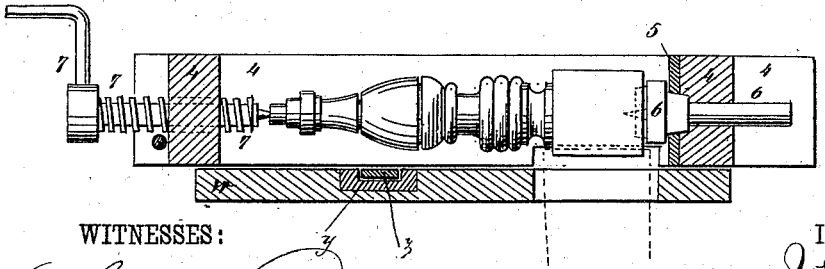


Fig: 11.



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UNITED STATES PATENT OFFICE.

JOHN GEORGE OETZEL, OF BROOKLYN, NEW YORK.

DOVETAILING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 335,833, dated February 9, 1886.

Application filed November 7, 1885. Serial No. 182,112. (No model.)

To all whom it may concern:

Be it known that I, JOHN GEORGE OETZEL, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Wood-Working Machines, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my improved machine, part being broken away. Fig. 2 is a sectional side elevation of the same, taken through the broken line *x x*, Fig. 1. Figs. 3, 4, and 5 are views illustrating a dovetailed joint formed by my machine. Fig. 6 is a sectional end elevation of the machine, part being broken away. Fig. 7 is a side elevation of the dovetail-cutter. Fig. 8 represents the same turned one-quarter around. Fig. 9 is an end elevation of the same. Fig. 10 is a plan view of a part of the machine shown as arranged for squaring furniture-legs, part being broken away. Fig. 11 is a sectional elevation of a part of the same.

The object of this invention is to provide wood-working machines designed especially for use in making furniture, but which can be used with advantage in other wood-working.

The invention consists in the construction and combination of various parts of the machine, as will be hereinafter fully described.

A represents the frame of the machine. To the top of the frame A are attached bearings B, in which revolves a shaft, C. To the middle part of the shaft C is attached a pulley, D, to receive a driving-belt, E, from any convenient power. In the end of the shaft C is formed a screw-hole to receive the screw-threaded shank of the cutter F for forming dovetails. The cutter F is made with cutting-lips F′ at its end, and with inclined cutting side edges, F², as shown in Figs. 7, 8, and 9. The cutter F projects through an aperture in the vertical guide-plate G, as shown in Figs. 1, 2, and 6.

The vertical guide-plate G is formed upon or rigidly attached to brackets H, the lower edges of which are dovetailed and fit into dovetailed grooves I in the top of the frame A, where they are secured in place by hand-screws J, so that the said guide-plate G, by loosening the said hand-screws J, can be adjusted out or in to allow the cutter F to cut a shallower or a deeper dovetail, as may be desired, and so that the said guide-plate G will be held rigidly in place when adjusted.

K is the feed-table, which is attached to a frame, L, resting and sliding upon the bracket-arms M, formed upon the end parts of the bracket-plate N, so that the said arms will be rigidly connected and will always move together. In the lower sides of the side bars of the frame L are formed V-shaped grooves to receive the V-shaped upper edges of the bracket-arms M to prevent the feed-table from having a lateral movement, while allowing it to be moved out and in easily.

Upon the outer edges of the side bars of the frame L are formed flanges O, projecting downward and then inward, and provided with set-screws P, to rest against flanges Q, formed upon the outer sides of the bracket-arms M, and thus lock the feed-table, when adjusted, from movement upon the said arms.

The ends of the bracket-plate N are rabbeted, and engage with rabbeted cleats R, secured to the frame A by screws S, and slotted transversely to receive the said screws S, so that the said cleats can be adjusted to take up the wear. The cleats R are secured, when in use, against outward movement by set-screws T, passing through screw-holes in flanges U, formed upon or secured to the frame A, so that the forward ends of the said screws T will rest against the outer edges of the said cleats R, as shown in Figs. 1 and 6. The bracket-plate N is provided with set-screws N′ to rest against the frame A and lock the said bracket-plate N in place when desired. Upon the inner side of the middle part of the bracket-plate N is formed, or to it is attached, a lug, V, to which is secured the end of a chain or cord, W. The chain or cord W passes over a guide-pulley, X, pivoted to a hanger, Y, secured to the top of the frame A. The other end of the chain or cord W is attached to a treadle, Z, hinged to a support secured to the floor or to the frame A, so that the feed-table can be raised by operating the said treadle Z. To the inner side of an end part of the bracket-plate N is hinged the lower end of a ratchet-

bar, *a*, the teeth of which engage with a catch-plate, *b*, attached to the top of the frame A, to support the feed-table in any position into which it may be adjusted, and to insure the said feed-table's being adjusted through equal intervals. The toothed edge of the ratchet-bar *a* is held against the catch-plate *b* by a spring, *c*, attached to the top of the frame A, and resting against the rear edge of the said ratchet-bar *a*, as shown in Figs. 1 and 6.

In using the machine to form dovetail recesses a piece, *d*, of timber to be recessed is placed with its edge upon the feed-table K, and its side resting against the guide-plate G, and is moved forward until the cutter F has cut a recess, *e*, to the desired depth. The timber *d* is then drawn back, the feed-table K is lowered through a space equal to the desired distance apart of the dovetail recesses *e*, and the said timber is again moved forward against the cutter F, and so on until the desired number of recesses *e* have been formed. The depth of the recesses *e* is made uniform by a gage-bar, *f*, pivoted at its outer end to the table K, and resting against a pin, *g*, inserted in a hole in the said table K. Two pins, *g*, are used, one upon each side of the gage-bar *f*, so that the timber to be recessed can be placed at either side of the cutter F, as may be desired.

In using the machine to form dovetail tongues, a number of the pieces *h* of timber to be operated upon are clamped together side by side, are placed edgewise upon the feed-table K, with their ends resting against the guide-plate G, and are moved laterally against the cutter F, which cuts a dovetailed groove across the ends of the pieces *h*, and thus forms one side of a dovetailed tongue. The table K is then lowered and another groove is cut, forming the other side of a dovetailed tongue, *i*, and so on until the desired number of tongues *i* have been formed. To the other end of the shaft C is attached or upon it is formed an extension, C', to serve as a mandrel to receive a saw, *j*, as shown in Figs. 1 and 2, or a cutter-head, *k*, as shown in Fig. 10, as the work to be done may require.

l is a feed-table, which is secured to a frame, *m*, resting upon bracket-arms *n*. The bracket arms *n* are formed upon or rigidly attached to a connecting-plate, *o*, so that the said arms will be kept in proper relative positions, and will be made to move together. The bracket-plate *o* rests against the end of the frame A, and is kept in place by cleats and screws *p q* and flanges and set-screws *r s*, in the same manner as the bracket-plate N hereinbefore described.

To the inner side of the middle part of the bracket-plate *o* is attached or upon it is formed a lug, *t*, which has a screw-hole formed through it to receive the hand-screw *u*. The hand-screw *u* is swiveled to a cross-bar, *v*, secured to the frame A, so that the feed-table *l* can be raised and lowered to allow the saw *j* or cutter-head *k* to cut to any desired depth. By operating the hand-screw *u* the table *l* can be adjusted to allow the work to be placed above or below the saw or cutter-head, as may be desired, or as the character of the work may render most convenient.

The table *l* is slotted to receive the saw *j*, and when the cutter-head *k* is to be used the said table should be replaced by a table, *w*, having a large opening to receive the said cutter-head *k*.

When the machine is to be used for cutting grooves in lumber, a gage and guide-cleat, *x*, is attached to the table *l* at a distance from the saw *j* equal to the desired distance apart of the said grooves, and of a breadth equal to the width of the said grooves, and the lumber to be grooved is placed upon the table *l*, with its edge resting against the cleat *x*, and is pushed forward over the saw *j*, which cuts the first groove. The lumber is then adjusted with the first groove upon the cleat *x*, and is again pushed forward over the saw, and so on until the desired number of grooves have been cut, the groove last cut being always placed upon the cleat *x*.

In the table *w*, or in both the tables *w l*, is formed a groove, *y*, which is preferably lined with metal, as shown in Figs. 1, 2, 10, and 11, to prevent wear, and within which is placed a sliding bar, *z*. To the bar *z* is secured by a hand-screw, 1, a plate, 2, in which is formed a curved slot, 3, to receive the hand-screw 1, so that the said plate and the frame 4, to which the said plate is rigidly attached, can be readily adjusted by loosening the said hand-screw 1. The frame 4 is formed of two side bars held at the proper distance apart by two end bars, and secured in place by two bolts passing through the ends of the said side bars. Several grooves are formed in the inner surfaces of the inner parts of the side bars of the frame 4 to receive tenons formed upon the ends of the inner end bar of the said frame, so that the said end bar can be readily adjusted at any desired distance from the outer end bar. The inner end bar of the frame 4 is faced with a metal plate, 5, in the center of which is formed a square hole to receive the squared neck of the clutch-head 6, the cylindrical stem of which passes through a round hole in the said end bar.

In the center of the outer end bar of the frame 4 is formed a screw-hole to receive the crank-screw 7, the forward end of which is pointed to serve as a center to receive the outer end of a furniture-leg or other work, a part of which is to be squared, and the other end of which is held by the points of the clutch-head 6, which points are arranged to correspond with the clutch-points of the lathe, so that the work will be centered by inserting the points of the clutch-head 6 in the holes formed by the points of the lathe-clutch and inserting the point of the crank-screw in the hole formed by the lathe-center. The frame 4 and the attached work are then pushed over the cutter-head *k*, which squares off one side of the work. The

frame 4 is then drawn back, the crank-screw 7 is turned out to release the work, and the work and clutch-head 6 are drawn forward, turned one-quarter around, and again pushed back into place. The crank-screw 7 is then turned forward, and the frame 4 and the work are again pushed over the cutter-head *k* and a second side of the work is squared, and so on until the four sides have been squared, the square hole in the plate 5 and the square neck of the clutch-head 6 causing the four sides of the work to be exactly at right angles with each other.

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

1. In a wood-working machine, the combination, with the frame A, shaft C, and cutter F, of the vertical guide-plate G, apertured to receive the said cutter, and provided with brackets adjustably held on the table, substantially as described, whereby provision is made for allowing the cutter to enter the work at any desired depth, as set forth.

2. In a wood-working machine, the combination, with the frame A, the shaft C, and the cutter F, of the vertically-adjustable bracket-arms M, connected by plate N, the feed-table K on said bracket-arms, the chain W, secured to the plate N, guide-pulley X, and treadle Z, substantially as herein shown and described, whereby the said feed-table can be readily raised and lowered, as set forth.

3. In a wood-working machine, the combination, with the frame A and the plate N, connecting the bracket-arms that carry the feed-table, of the ratchet-bar *a*, pivoted to the said bracket-plate, its catch-plate *b*, secured to the table, and holding-spring *c*, having its free end resting against said catch-plate, substantially as herein shown and described, whereby the said feed-table can be readily raised or lowered through uniform spaces, and will be securely held in place when adjusted, as set forth.

4. In a wood-working machine, the combination, with the bracket-arms M, having flanges Q, and the feed-table K, of the frame L, to which the feed-table is attached, provided with angular flanges O, for the reception of the flanges of the bracket-arms, and the set-screw P, passing through the flanges O and bearing against the flanges Q, substantially as described, whereby the table can be readily adjusted and will be firmly held in place, as set forth.

5. In a wood-working machine, the combination, with the frame A and the plate N, connecting the bracket-arms M that carry the feed-table, of the slotted cleats R, the screws S, for securing the cleats to the frame, the frame-flanges U, and the set-screws T, for preventing outward movement of the cleats, substantially as herein shown and described, whereby the said plate will be held in place and the wear can be taken up, as set forth.

6. In a wood-working machine, the combination, with the feed-table *w*, of the frame 4, having adjustable inner end bar, the facing-plate *r*, attached to the said end bar and having tapered square neck and cylindrical ing square perforation, the clutch-head 6, stem, and the crank-screw 7, substantially as herein shown and described, whereby the work to be squared can be readily clamped and carried to the cutter-head and turned through exactly one-quarter of a revolution, as set forth.

7. In a wood-working machine, the feed-table having a groove, *y*, and the sliding-bar *z* in said groove, in combination with the work-carrying frame above the table, provided with the plate 2, having a curved slot, 3, and the clamping-screw 1, secured to the sliding bar and working in the slot of the plate 2, substantially as herein shown and described, whereby provision is made for moving the said frame squarely up to the cutter-head, as specified.

JOHN GEORGE OETZEL.

Witnesses:

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EDGAR TATE.