

(No Model.)

4 Sheets—Sheet 1.

E. W. SNEDEKER.

COMBINED MORTISING, TENONING, AND PLANING MACHINE, AND
TURNING LATHE.

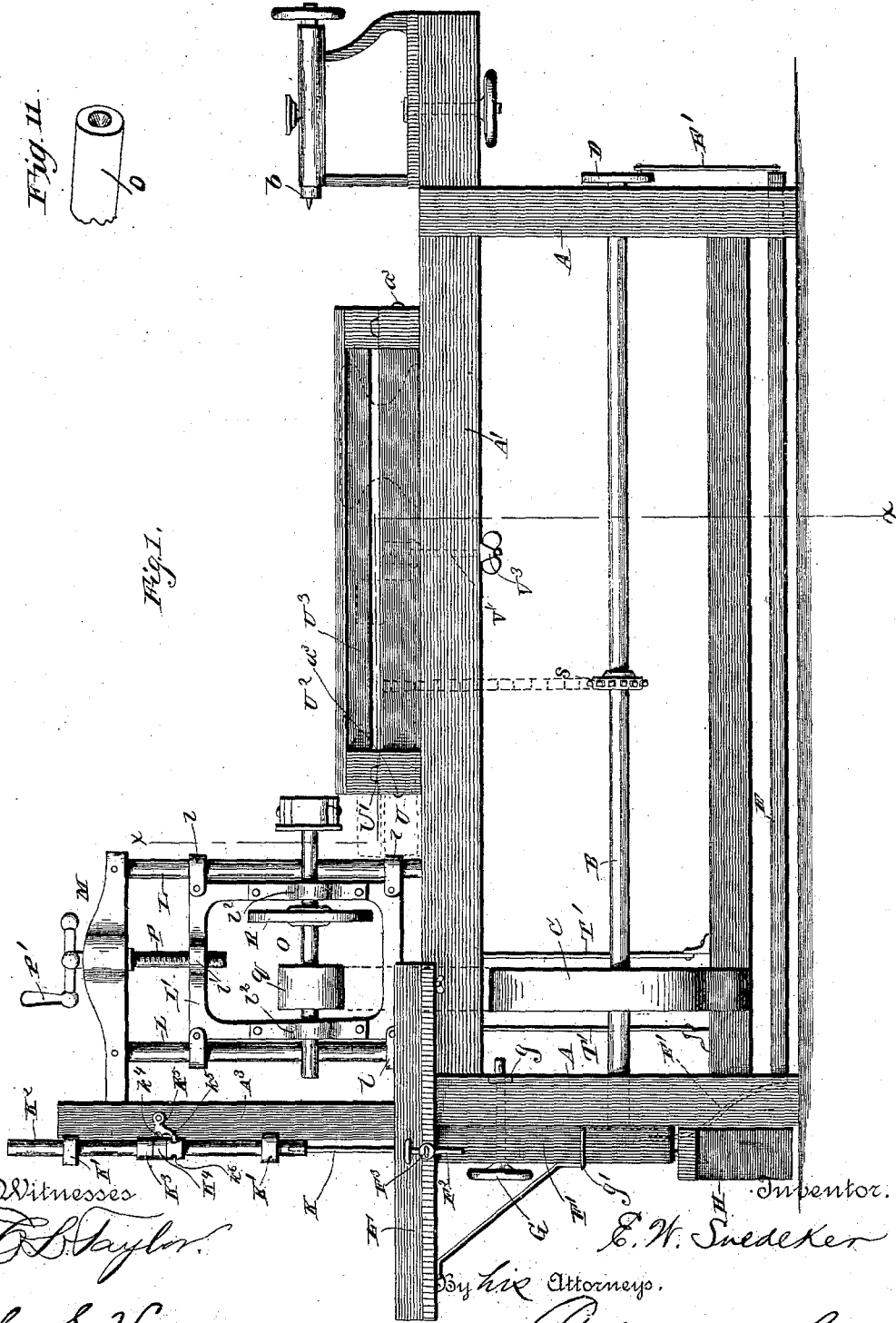
No. 380,953.

Patented Apr. 10, 1888.

Fig. II.



Fig. I.



Witnesses

E. Taylor

C. S. Hyer

Inventor.

E. W. Snedeker

By his Attorneys.

C. Snowden

(No Model.)

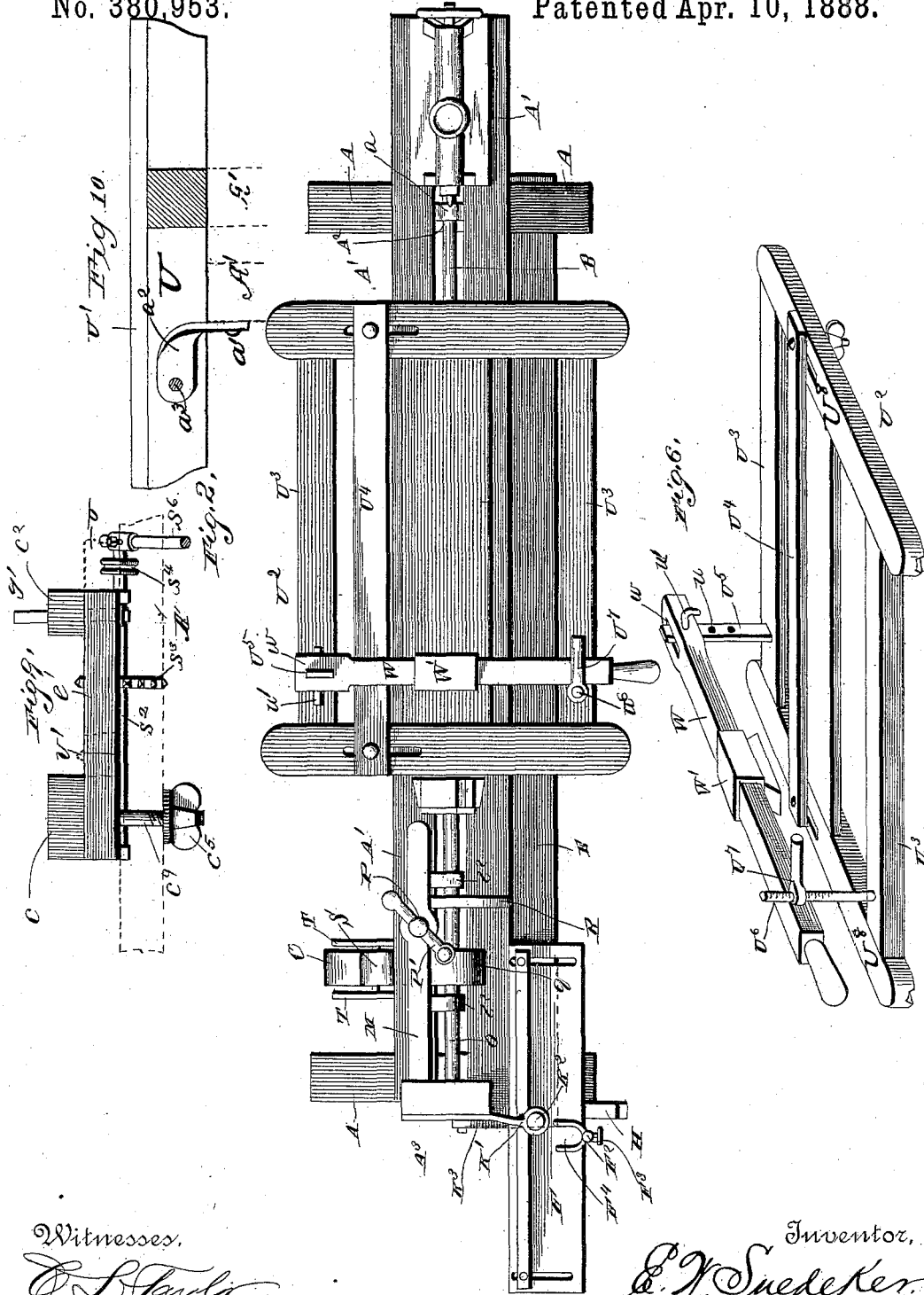
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No. 380,953.

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Witnesses,

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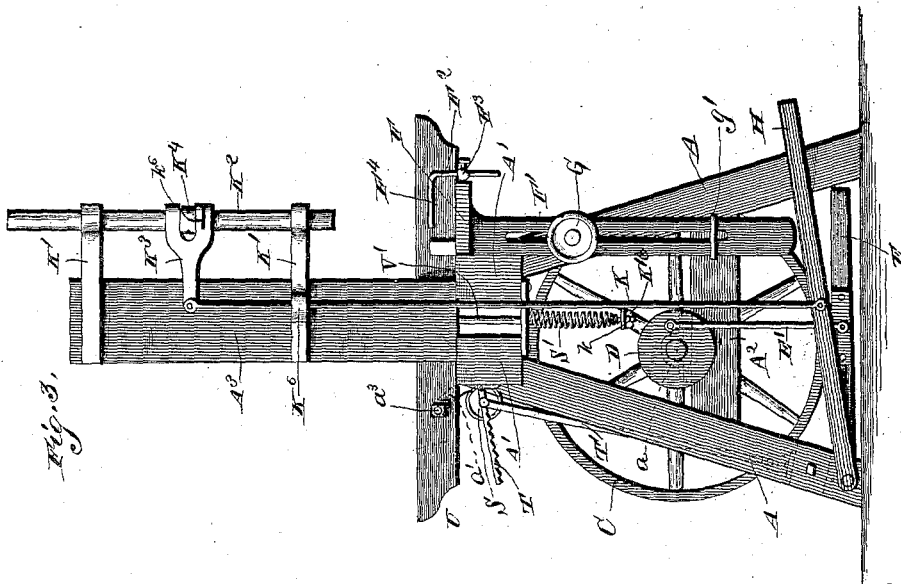
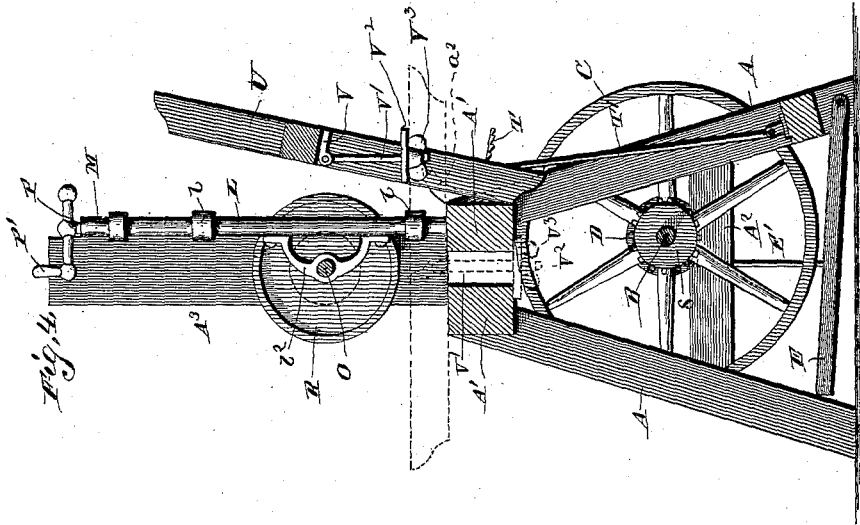
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Witnesses.

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(No Model.)

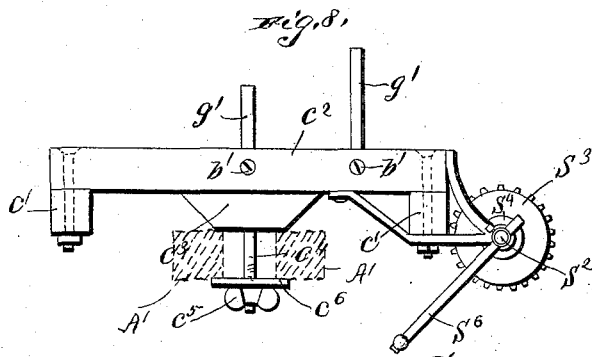
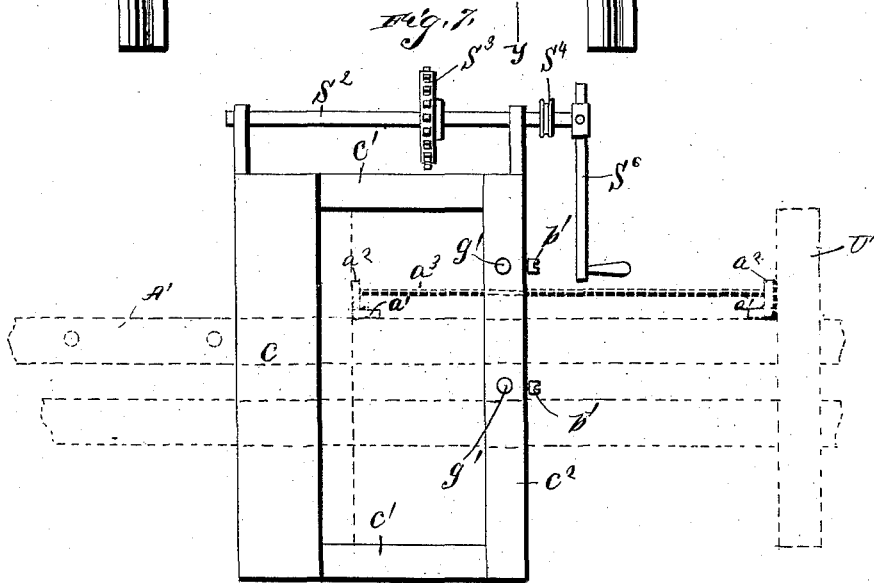
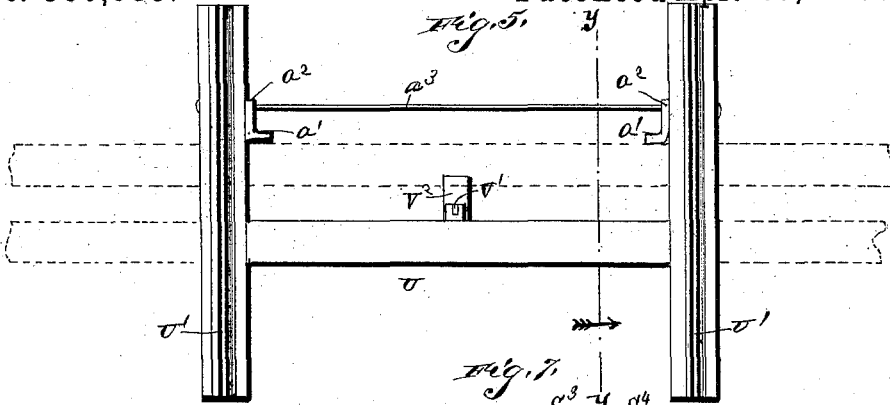
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UNITED STATES PATENT OFFICE.

EDGAR WYVILL SNEDEKER, OF JAMESBURG, NEW JERSEY.

COMBINED MORTISING, TENONING, AND PLANING MACHINE, AND TURNING-LATHE.

SPECIFICATION forming part of Letters Patent No. 380,953, dated April 10, 1888.

Application filed June 11, 1887. Serial No. 241,030. (No model.)

To all whom it may concern:

Be it known that I, EDGAR WYVILL SNEDEKER, a citizen of the United States, residing at Jamesburg, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in Combined Mortising, Tenoning and Planing Machine, and Turning-Lathe, of which the following is a specification.

My invention relates to a combined mortising, tenoning, and planing machine, and turning-lathe; and it consists in the construction and arrangement of the parts of the same, which will be more fully hereinafter described, and pointed out in the claims.

The primary object of my invention is to provide a combined wood-working machine embodying several machines in one, which are adapted to be shifted as either one of the separate devices is adapted to be used, the power being transmitted from a single-line shaft situated in and supported by the lower framework.

A secondary object of my invention is to provide a compact wood-working machine capable of adjustment and arrangement to provide for the separate use of any one of the single mechanisms, which are driven by foot-power, and which, when in operation, do not interfere with any of the remaining parts of the machine.

A further object of my invention is to provide a wood-working machine which is complete in its construction and which can be arranged as a mortiser, tenoner, turning-lathe, and planer at will and as may be desired, the several adjustments used for accomplishing the desired change being so constructed as to arrange the parts with which they are in connection in a relative position to the working-tools and feed and guide the same with mechanical nicety.

A further object of my invention is to provide a combined wood-working machine combining a mortiser, tenoner, turning-lathe, and planer which are readily adjustable and adapted to be used separately and independently, and in which, when it is desired to use two different parts thereof in working upon the same stock, the change may be made with rapidity and without labor and loss of time by

reason of the relative positions of the several mechanisms.

A further object of my invention is to provide a combined wood-working machine which is simple and effective in its construction and operation, easily handled and readily understood and operated, strong and durable, positive in its desired ultimate result, compact in its construction and arrangement, and comparatively inexpensive in its manufacture. I attain these objects by the mechanism illustrated in the accompanying drawings, wherein like letters of reference indicate similar parts in the several views, and in which—

Figure 1 is a side elevation of my improved machine. Fig. 2 is a top plan view of the same. Fig. 3 is an end elevation of the mortising end of the machine. Fig. 4 is a transverse vertical section on the line xx of Fig. 1, the mortising mechanism being omitted. Fig. 5 is a top plan view of a portion of the table attachment used with the tenoning portion of the machine. Fig. 6 is a detail perspective view of the sliding table used in connection with the tenoner. Fig. 7 is a detail top plan view of an attachment adapted to be used in connection with the bed of the machine when the same is converted into a planer. Fig. 8 is a side elevation of the attachment shown in Fig. 7. Fig. 9 is an end elevation of said section. Fig. 10 is a cross-sectional view on the line yy of Fig. 5, looking in the direction of the arrow. Fig. 11 is a detail perspective view of the inner end of the mandrel.

A indicates the legs of the framework, which are arranged at a slightly outward inclined position to accommodate the mechanism mounted in connection therewith, and have two bed-beams, A' , secured in mortises formed at their upper ends, a space being left between said bed-beams, for purposes which will be more fully hereinafter set forth. The said bed-beams A' extend the entire length of the machine and are adapted to support the mechanism above the lower framework and the several connections thereof. Secured to the four legs A are suitable cross-beams, A^2 , having boxes a secured to their top edges, in which the main shaft B is journaled below the bed-beams A' . The ends of the main shaft B have

disks or plates D secured thereto and wrist-pin eccentrically mounted in connection therewith, to which the ends of rods E' are secured, the other ends of which rods are connected to a treadle, E, which is mounted in a manner similar to any well-known form of foot-power treadle. The rod E', adjacent to the mortising end of the machine, is made of slightly-irregular shape, so as to pass around the construction required at this point. Upon the shaft B the main driving-pulley C is mounted, from which motion is translated to the tenoning, planing, and lathe mechanism. On the outer side of the legs A, adjacent to the mortising end of the machine, a treadle, H, is mounted, which projects outwardly beyond the front leg A and is normally situated at a higher elevation than the treadle E. This treadle is adapted to operate the mortising-tools, and I will now set forth the construction and arrangement and manner of combining the attachments in connection with the several parts to convert them into the several mechanisms.

Upon one end of the bed-beams A', at the left side of the main frame, an adjustable table, F, is secured, being adjustable in a vertical plane by means of a slotted beam, F', secured to the under side thereof, the slot of which beam is engaged by a clamping-screw and clamp-wheel, G, which operate in connection with the metallic block g, secured to one of the legs A, as shown in Figs. 1 and 3, and by means of which wheel and screw G the table is secured in either of its adjusted positions by the clamping action of the said screw and wheel, as will be readily understood.

To further aid the beam F' in its movement and guide the same in a direct line, a metallic staple, g', is secured to one of the cross-beams A² and over the lower end of the said beam F'. The advantage of the adjustability of this table F is readily understood and need not be further specified. To one side of the said table F a vertically-arranged rod, F², is mounted, passing through a head, F³, having a set-screw in connection therewith, which is adapted to clamp the said rod in the position in which it may be adjusted. The upper end of this rod is provided with a forked arm, F⁴, Fig. 2, which is adapted to engage with the top surface of the stock being operated upon and to hold the same in contact with the table against the action of the mortising tool or chisel.

Secured to one side of the treadle H is a rod, K, Fig. 3, which passes upward between the beams A' A' and adjacent to the face of the mortising-mechanism supporting standard A³, as shown in Fig. 3. As shown in said figure, the upper portion of the standard A³ is provided with two horizontally-arranged arms or guides, K', which extend outwardly from one side of the standard and are adapted to guide the chisel-bar K², which passes through apertured collars formed integrally with the outer ends of the said guides K'. Between the said guides K' a bifurcated link, K³, is secured, through the apertured end of which the chisel-

bar K² passes, a collar, K⁴, being mounted in the bifurcation of the said link and rigidly secured in connection with the said chisel-bar K². To the said collar K⁴ ears k⁴ are formed or secured, in which a lever, K⁵, is hinged, Fig. 1, having a depending end or finger, k⁵, which is adapted to engage with slots k⁶, formed at each side of the lower projecting portion of the link K³, situated below the collar K⁴, said slots k⁶ being adapted to receive the end of the finger k⁵ when the chisel-bar K² is reversed to change the cut of the chisel thereby supported. The rod K is secured to the inner end of the link K³, and said rod being secured at its lower end to the treadle H a vertical downward movement is given to the said chisel-bar K². To the rod K, under the bed-beams A', a lug, k, is secured, which projects outwardly therefrom and receives the screw-threaded end of a spring, S', an adjusting or tension nut, K¹⁶, being mounted on the said lower screw-threaded end of the spring S' and engaging with the under side of the lug k. The upper end of the spring S' is secured to a metallic plate secured to the under side of the bed-beams A', and through the medium of this adjustable spring the chisel-bar K² is thrown upward in a vertical plane in the guide-arms K' after the lever or treadle H has been depressed and the pressure of the foot relaxed thereon.

By adjusting the spring S' the upward stroke of the chisel-bar K² will be regulated as to rapidity of movement. The rod K passes through a guide-box, K⁶, secured to the lower guide-arm, K', and by means of which the said rod is given a vertical movement at this point, which, being transmitted to the chisel-bar K², produces a direct vertical movement of said bar. The said bar K² could readily be operated in a vertical plane and raised after being depressed by the lever H; but if green stock were being worked or the chisel should be slightly rusted there would be a tendency to stick, and to overcome this defect, which might occur, the spring S' is used in connection with the rod K, which instantly releases the chisel from the stock with which it is operated. Suitable brace-arms may be arranged at this end of the machine for steadying the movement of the parts situated thereat, and which may be arranged as may be desired and deemed necessary to strengthen the several parts or mechanisms.

To the right of the standard A³ two cylindrical steel standards, L L, are mounted, upon which a head or casting is secured, said head or casting M being secured to the standard A³ and increased in size at its central portion, for a purpose which will be more fully hereinafter set forth. Upon the standards L L a frame, L', is mounted, having boxes l l secured to its upper and lower corners adapted to pass over and have movement on the said standards L. The upper central portion, l', of the frame L' is slightly enlarged to form a seat for the adjusting-screw P, which passes through the central portion of the casting M and has an op-

erating crank or handle, P', secured to the upper portion thereof. By this means the said frame L' may be adjusted in a vertical plane, either upwardly or downwardly, on the said standards L L. On one side of the frame L' and secured to vertical arms thereof are boxes Z', which project outwardly from the frame L' and receive a mandrel, O, which by the arrangement of the boxes Z' is situated in the central vertical line of the machine, for a purpose which will be more fully hereinafter set forth. Mounted upon the said mandrel between the sides of the frame L' is a balance-wheel, R, and in the rear of the balance-wheel R a small pulley, q, is keyed in line with the pulley C and from which it receives its motion by means of a belt, as will be readily understood. The one end of the mandrel O projects outwardly from the side of one of the standards L for the purpose of receiving the cutter-heads when it is adapted to convert the machine into a tenoner or planing-machine. A recess of slightly conical configuration is formed in the outer end of the said mandrel O, and is adapted to receive a center when the machine is used as a lathe.

Adjacent to the standards L and in relative position to the projecting end of the mandrel O a frame, U, is secured upon the bed-beams A', said frame consisting of two transversely-arranged bars or beams and a longitudinally-arranged beam connecting said transverse beams. The transverse beams have U-shaped track-castings U' secured to the upper side thereof, which engage with grooves formed with correspondingly-arranged strips secured to the top table, U², upon which the material adapted to be worked by the machine is placed. This table U² has longitudinal strips U³ uniting the side transverse strips, U³, and resting on the top thereof is an adjustable strip, U⁴, which constitutes the gage of the said table, moving in slots in transversely-arranged strips thereof. To the rear portion of the said table a metallic upright bar, U⁵, is secured, having a series of apertures, u, formed therein, which are adapted to be engaged by an eyebolt, u'. To the forward portion of the said table a screw-rod, U⁶, is mounted in a vertical position, having the extended nut U⁷ mounted on the top portion thereof. A bar, W, having a slotted end, w, is adapted to be connected to the metallic bar U⁵ and caused to exert a pressure upon the stock carried by the table and being operated upon by the machine through the medium of the screw-rod U⁶, having the winged extended nut U⁷. The slot w in the said bar W is placed over the metallic bar U⁵, and when adjusted to have sufficient play the eyebolt is inserted in the apertures in the said bar above the bar W. The central portion of the bar W is provided with a strip, W', which is secured thereto, and which is mounted in such a position on the bar W as to engage with the connecting-strip or the material resting thereupon and being operated in connection with the machine. When the material or stock has been

placed upon said table, the bar W is placed over the same, with the projection W' thereof resting on the top surface of the said material or stock. The forward end of the bar W is then arranged adjacent to the screw U⁶, and the winged nut U⁷ is adjusted on the said screw-rod with this engagement until the bar W' is clamped thereunder, and retained in such a position as to clamp the material on the top surface of the feeding-table. To the rear portion of one of the beams A' hinged castings a' are secured, which have outwardly-projecting portions a² extending from the rear portion of the said beam, to which they are secured. These castings or hinge-plates are mounted in such a position on said beam that they will project therefrom adjacent to the inner sides of the transverse strips of the table U. (See Figs. 3, 4, 5, and 10.) A metallic rod, a³, passes through the transverse strips of the table U and through the hinge-plates a', passing through eyes formed in the projecting portions a² thereof. When it is adapted to throw the table U backward, as shown in Fig. 4, the said table is swung back upon the rod a³, as shown, and in such a position as to prevent the said table from falling forward over the bed-beams A', and thereby interfere with the working of any other part of the machine which may be used at that time. This retention of the table when thrown back is due to the arrangement of these several parts, as shown, which allows the said table to assume a rearward-inclined position to the vertical plane of the beam A' to which it is secured, and thereby throwing it past the center, as will be readily understood. In order to secure the said table in a permanent position on the beams A', a casting, V, is secured to the longitudinal connecting strip of the said table U, said casting having an eye formed in its lower portion, to which a bolt, V', is pivotally secured and projects through the recess between the two beams A' A'. A rectangular-shaped plate, V², is mounted on the lower end of the said rod or bolt, and a winged nut, V³, is placed on the lower threaded end of this bolt V', and when said plate is turned in such a position as to be at right angles to the direction of the recess between the beams A' the said winged nut is screwed home against the said plate and the tilting table thereby secured in contact with the beams A'. When it is adapted to release the said table for the purpose of throwing it backward to the rear of the machine, the winged nut is loosened and the plate turned in such a direction as to readily pass through the space between the two beams A', and the bolt, plate, and wing-nut are raised through said space and carried backward with the table, as shown in Fig. 4.

To convert the machine into a planer, the sliding table U² is removed from the table U, and the table shown in Figs. 7 and 8 is rested on said table U and that portion of the beams A' between the said table and the standards L, as indicated in dotted lines in Fig. 1. When

in position upon the said beams A', the transverse strip of the table U nearest the standard L supports the internal portion of the said table, as indicated in Fig. 9. The table, as represented in Figs. 7, 8, and 9, consists, essentially, of a broad strip, *c*, arranged between the left-hand guide of table U and the right-hand vertical guide or standard L, as fully shown in dotted lines in Fig. 1, and is mounted on the top surface of two longitudinally-arranged strips, *c'*, Figs. 8 and 9. Mounted on the opposite ends of the strips *c'* is a narrower strip, *c''*, running parallel with the broad strip *c*. The strip *c''* has two vertical guide-rods, *g'*, mounted therein, and are adjustable by means of set-screws *b'*, being adapted for a purpose and operating in a manner well understood in the art. At the central portion of the broad strip *c*, on the under side of the same, a metallic block, *c'*, is secured, having a vertically-arranged screw-rod, *c''*, passing through said block and the strip *c*, and having a winged nut, *c'''*, on the lower end thereof and a clamping-plate, *c''''*, mounted on said screw-rod above the winged nut. By this means the said table is held in permanent engagement with the beams A', and thereby steadied against the action of the planing machinery. At the rear portion of this frame-work, as just described, a shaft, *S'*, is mounted and extends the whole length across the rear portion of the frame, being mounted in boxes at each end, and a sprocket-wheel, *S''*, is secured on said shaft, which is connected, by means of an endless chain belt, with a small sprocket-wheel, *s*, keyed to the main shaft B, as indicated in dotted lines in Fig. 1. On the shaft *S'*, outside of the frame-work, a pulley-wheel, *S'''*, is mounted, which is adapted to engage and operate in connection with suitable feed mechanism which will be mounted upon the standards *g'*. This feeding mechanism will not be described herein, as it may be of any desired construction and is for the purpose of feeding the stock to the mandrel, as will be readily understood. Upon the outer end of the said shaft *S'* an adjustable handle, *S''''*, is mounted, and by which the planer may be operated, in this instance the treadle-connecting bars being disconnected from the shaft B and hand-power used through the medium of the said handle *S''''*. A suitable cutter-head is placed on the mandrel O, which may be changed as may be desired and required in the dressing of different kinds of wood and for different purposes.

To convert the machine into a lathe, the planing-frame is removed, as well as the sliding table, and an ordinary tool-rest (indicated in dotted lines in Fig. 1) mounted in position on the beams A'. The tail-stock *b* is constructed of considerable height and remains on the bed-frame of the machine at all times, being situated at such a portion thereof by adjustment as to be entirely clear of the remaining operating portions of the machine. The said tail-stock *b* is adapted to have the longi-

tudinal movement common to said mechanisms, having a clamping-screw connected to the under side thereof. The said tail-stock is constructed of such height above the bed-beam A' as to permit of the turning of various sizes of material, the motion being applied to the said lathe by a belt from the wheel C to the pulley *g*, secured on the mandrel O, which will be readily understood, and which is operated by foot-power from the treadle E.

Having thus set forth the mechanical construction of the several parts of my improved combined wood-working machine, I will now proceed to describe the operation of the several parts thereof.

In the operation of the mortiser the timber to be mortised is placed on the adjustable table F and said table so arranged that when the chisel-bar is down the chisel extends a little more than half-way through the stock or timber. The fork F⁴ is then adjusted to hold the stock in position to prevent the material from bouncing upward at the return-stroke of the chisel. The treadle H is then operated by foot-power and the timber fed by hand until the end of the mortise is reached. The chisel-bar is then reversed and the opposite end finished. The stock is then turned and the same operation repeated.

In the operation of the tenoner the belt is placed over the pulleys *c* and *g*, and, the depth of cut having been determined, the said belt is also placed over the belt-tightener, which is of the following construction: Two rods, T', are secured to the lower rear portion of the legs A and extend upwardly and support a shaft upon which the belt-wheel S is secured. The rods T' have a pivotal swinging movement and carry the shaft upon which the pulley S is mounted in their said movement. The said shaft is adapted to engage with the under side of serrated bars T, projecting outwardly from the frame or bed beams A' in the rear of the machine. When the frame L' is raised or lowered to regulate the depth of cut, as hereinbefore set forth, the belt encircling the wheels C and *g* must of necessity be adjusted to transmit the power from the pulley C without slipping. To adapt the same belt for any position in which the frame L' may be adjusted, it is made of such length as to relatively operate in connection with the pulley *g* when the frame is raised to its highest position. When the said frame is adjusted to any intermediate position, the belt-tightener pulley S is brought into play by passing the belt thereover and adjusted on the serrated bars T, as will be readily understood, to take up all possible slack in the belt. By this means it will be seen that a single belt is used, which is always in position upon the pulley C and *g*, and is arranged in proper relation to the said pulleys when the frame L' is adjusted by the adjustment of the belt-tightener. When the adjustment has been obtained, the tenoning or cutter head is placed on the mandrel O and the stock or timber placed under and in relative position to

said cutter-head. The table upon which the said material rests, is then drawn by the operator toward himself at the same time that he is working the treadle E. By this mode of operation more power is brought to bear than would be if the table were pushed from the operator, as will be readily understood.

The operation of the planer and the lathe will be readily understood, the working thereof requiring merely the adjustment hereinbefore set forth.

By the use of my improved machine a mortiser, tenoner, planer, and turning-lathe are combined in one machine and adapted to be operated by foot-power alone, and the operation of either of said mechanisms separately is not impaired by the other. The mechanism is compact and simple in its construction, and small space is occupied by the entire machine, considering the number of machines employed. The parts may be made of wood or metal, as may be desired and thought applicable for various kinds of work. The tenoner has the capacity, as to power and adjustment, to cut a tenon for the largest door or smallest sash, and will cut tenons on three-inch stock down to the smallest piece. The machine is also adapted for face-plate turning or pattern-cutting, as the parts of the lathe are so constructed that a disk of sixteen inches diameter may be cut and prepared, and using only the foot-power mechanism hereinbefore described.

The planing mechanism is simple in its construction and can do a vast range of work, there being but one thumb-nut to secure it in position, and is capable of doing light planing, rabbeting, molding, and such class of work.

It is obvious that many minor changes in the construction and arrangement of the several parts may be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having thus described my invention, I claim—

1. The combination, with the supporting-frame having the beams A', of the hinge-plates a', secured to the rear beam A' and projecting laterally therefrom, the rod a², inserted through the projecting portions of the plates a', and the table U, pivoted at an intermediate point of its length upon the ends of the rod a², whereby when said table is swung backward its rear edge will rest against the beam A' and the table be thereby supported in its raised position, as set forth.

2. The combination, with the legs A, of the elongated beams A', supported by the same and having an intervening space between them, the table F, mounted in connection with said beams, the vertical longitudinally-slotted arm F', depending from said table, the metallic block g in one of the legs A, the clamping-screw having a hand-wheel, G, inserted through the slot in the arm F' and engaging

the block g, the staple g', secured to one of the legs A and receiving and guiding the vertical arm F', the standard A³, erected upon the beams A' adjacent to the table F, the chisel-bar carried by said standard, and the treadle H, for operating said chisel-bar, substantially as specified.

3. The combination, with the supporting-frame, the shaft B, journaled therein and having a sprocket-wheel, s, and the table U on the supporting-frame, of the removable table rested on the table U, the shaft s², carried by the removable table, the sprocket-wheel s³ on said shaft, adapted to be geared to the sprocket-wheel s, and the pulley s⁴ on said shaft, adapted to actuate a feed mechanism, substantially as set forth.

4. The combination, with the beams A', of the table U, hinged thereto, the bolt V', hinged to the said table and adapted to pass between the beams A', and the plate V², carried by said bolt and adapted to be turned so as to engage under the beams A' and lock the table thereto, as set forth.

5. The combination, with the beams A', of the frame, the table U, hinged thereto and having its upper face provided with a track, the top table, U², fitted and movable on the track of the hinged table, and clamping devices to lock the hinged table in its horizontal position, as set forth.

6. The combination, with the beams A', of the frame, the table U, hinged thereto and having its upper face provided with a track, the top table, U², fitted and movable on the track of the hinged table, clamping devices to lock the hinged table in its horizontal position, and the vertically-adjustable clamping-lever W, carried by the top table, U², as set forth.

7. In combination with the beams A', set at a distance apart, the table U, hinged thereto, and the swinging bolt V', carried by the table and fitting between the beams A', as set forth.

8. In combination with the swinging table U, the top table, U², having the adjustable bar U⁴, the clamping-bolts connected to the bar U⁴, and the vertically-adjustable clamping-lever W, as set forth.

9. The combination, with the standard A³, having the arms K', carrying the chisel-bar K², of the bifurcated link K³, having recesses k⁵ arranged in opposite sides of the lower portion of the bifurcation, the collar K⁴ on the chisel-bar K² in the bifurcated portion of the link K³, and the securing reversing-lever K⁵, hinged to the collar K⁴ and having an end, k⁶, adapted to engage the recesses k⁵ in the lower portion of the bifurcated link K³ to lock the chisel-bar when reversed, substantially as described.

10. The combination, with the standard A³, of the arms K', carrying the chisel-bar K², the lower one of said arms being formed with an integral guide-box, K⁶, the vertically-moving rod K, having the integral lug or projection k and moving in said box K⁶, the bifurcated link K³ attached to the chisel-bar secured to

the upper end of said rod, the independent treadle H, connected to the lower end of said rod K, the spring S, adjustably secured at its lower end to the lug k and at its upper end to the under side of the supporting-beams, and the nut K¹⁶, for adjusting said spring S', substantially as described.

11. The combination, with the beams A', having an intervening space, of the hinged table U, having the longitudinal strip, as shown, the casting V, the rod V' in pivotal connection with the casting, the plate V², and the winged nut V³, substantially as described.

12. The feeding-frame U², consisting of the transverse bars U⁸, having slots therein, the

longitudinal bars U³, the adjustable strip U⁴, the apertured upright U⁵, the screw-threaded upright U⁶, having the clamping-arm U⁷, and the lever W, adjustably pivoted in the upright U³ and having the central casting, W', adapted to engage with the top surface of and clamp the material being operated upon, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

EDGAR WYVILL SNEDEKER.

Witnesses:

T. WILTON HILL,

C. E. WESTERVELT.