

No. 769,041.

PATENTED AUG. 30, 1904.

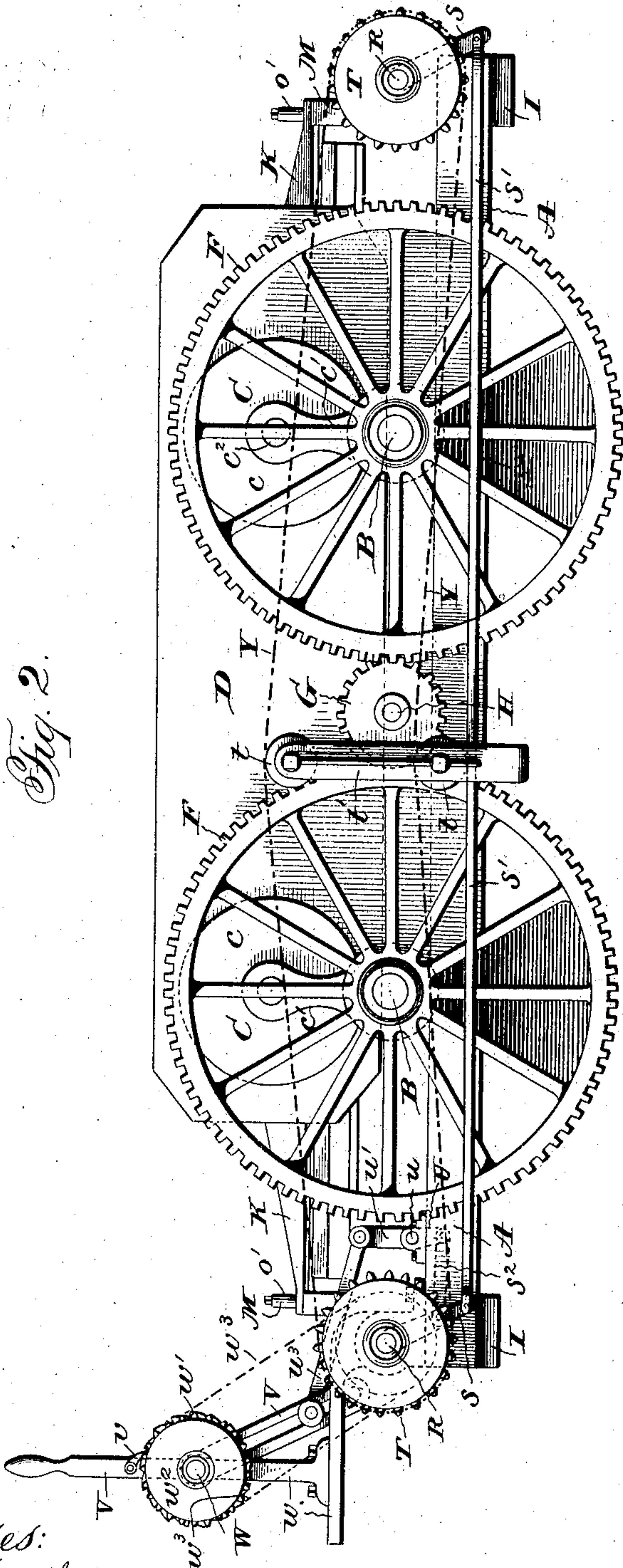
C. B. ALLEN.
VENEER CUTTING MACHINE.

APPLICATION FILED FEB. 28, 1903.

NO MODEL.

3 SHEETS—SHEET 2.

Fig. 2.



Witnesses:
Jas. Hutchinson.
J. L. Lawlor.

Inventor.
Chester B. Allen,
by Edwin J. Prindle, Atty.

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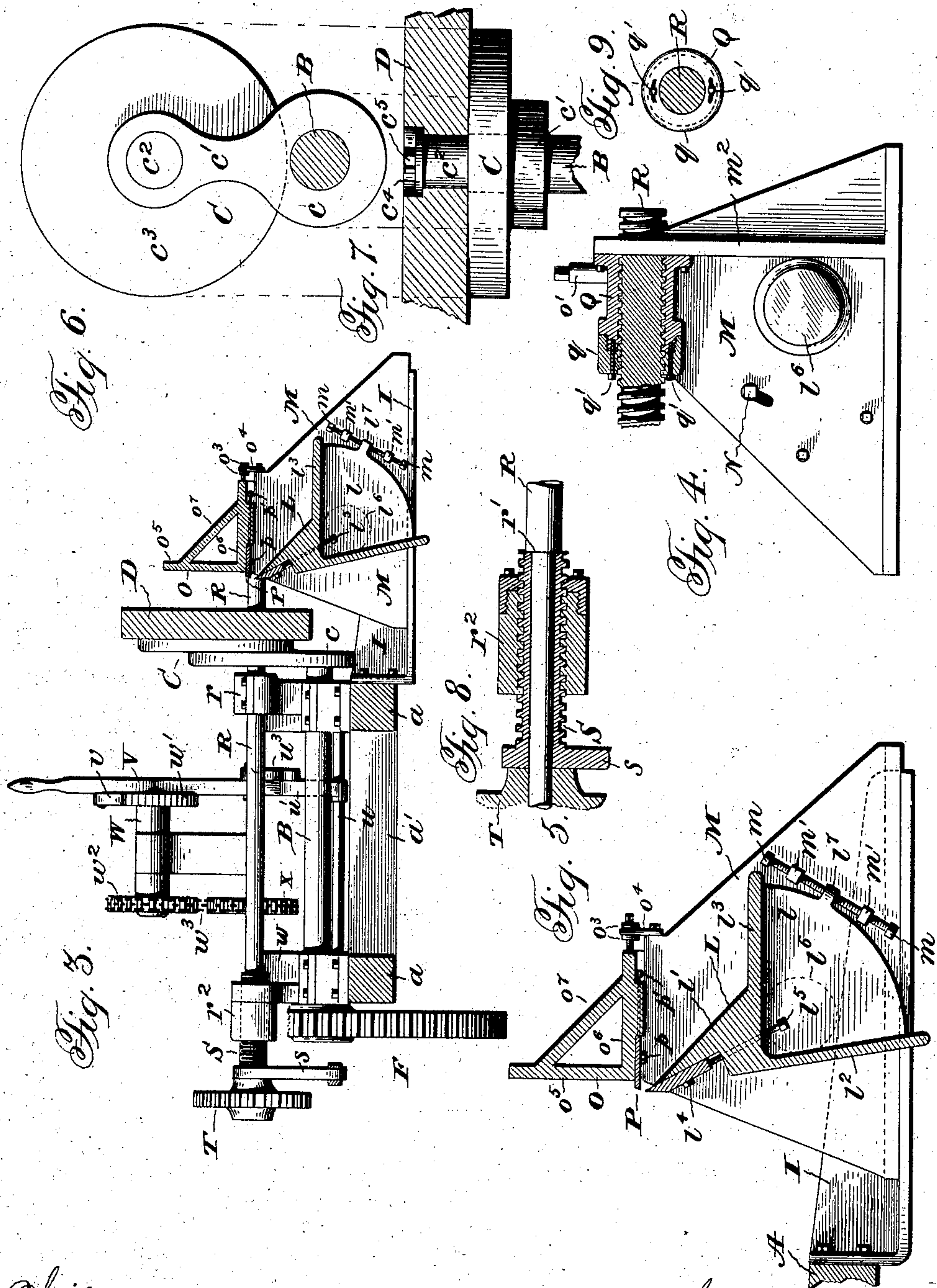
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UNITED STATES PATENT OFFICE.

CHESTER BYNON ALLEN, OF JOHNSON CITY, TENNESSEE, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO SAID ALLEN, WILLIAM E. UPTEGROVE, OF NEW YORK, N. Y., AND JEROME P. UPTEGROVE, OF BROOKLYN, NEW YORK.

VENEER-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 769,041, dated August 30, 1904.

Application filed February 28, 1903. Serial No. 145,476. (No model.)

To all whom it may concern:

Be it known that I, CHESTER BYNON ALLEN, of Johnson City, in the county of Washington, and in the State of Tennessee, have invented a certain new and useful Improvement in Veneer-Cutting Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a veneer-machine embodying my invention. Fig. 2 is a rear view of such machine. Fig. 3 is a sectional view taken on the line 3 3 of Fig. 1. Fig. 4 is a sectional view taken on the line 4 4 of Fig. 1. Fig. 5 is a transverse sectional view of the knife-carriage. Fig. 6 is a detail view of one of the cranks. Fig. 7 is a detail view of the connection between one of the cranks and the stay-log, and Fig. 8 is a detail sectional view showing the relieving-screw. Fig. 9 is a transverse sectional view of the screw-rods for moving the knife-carriage, showing the adjustable nut.

The object of my invention has been to produce a veneer-machine having, among others, the following advantages: that of insuring a positive and uniform feed of the knife and wood together, so that veneer of uniform thickness can be produced; that of positively and uniformly separating the knife and wood during the return stroke after having cut the veneer and of having mechanism for this purpose which shall be durable and not easily affected by wear; that of having means for readily adjusting the angle of the knife to the wood; that of having a strong drawing action to the cutting during the cutting of the heart or other soft portions of the wood, while at the same time having only an ordinary degree of drawing action during the cutting of the firmer portions of the wood, and that of having means for limiting the travel of the knife toward and away from the stay-log, so that accidents are prevented, while quick retracting motion of the knife is permitted; and to such ends my invention consists in the veneer-cutting machine hereinafter specified.

In carrying my invention into practice in the instance chosen for illustration I provide

a base A, preferably consisting of longitudinal bars *a*, that are preferably connected intermediate their ends by cross-bars *a'*. Upon the bars *a* are mounted opposite pairs of bearings *a''*, in each pair of which is journaled a shaft B, the two shafts being parallel. Each of the shafts B carries on its forward end a crank C, each of which cranks has a hub *c*, that is fixed on the end of its respective shaft B, and has an arm *c'* projecting from said hub and carrying at its outer end a crank-pin *c''*. A flange or disk *c'''* is formed on and preferably integral with the arm *c'* and the crank-pin, and such disk is concentric with the crank-pin. A stay-log D is secured to the cranks C, as by having the crank-pins *c''* pass through holes in the rear face of the stay-log, the outer or forward ends of the crank-pins having washers *c'''* seated in countersunk recesses in the face of the stay-log and secured to the crank-pins, as by bolts *c''''*. The disks *c'''* upon the cranks bear against the rear face of the stay-log, and thus afford extended bearings of the stay-log on the cranks, so as to positively prevent any tilting or twisting of the said stay-log with reference to the shafts B. The stay-log is provided with the usual or any desired means for holding the block E, from which veneer is to be cut. Upon the rear end of each of the shafts B is secured a gear F, which gears mesh with a pinion G, that is mounted on a shaft H, preferably supported in bearings on the frame A. Power is applied to the shaft H to drive the pinion G and through such pinion the gears F, and thus to cause the cranks C to carry the stay-log up and down, so that every point in the stay-log travels in a circle. The shaft H may have a belt-pulley and friction-clutch or any other desired means for applying power to such shaft. Guideways I are secured one at each end of the forward bar *a* of the frame, and a knife-carriage K is mounted on such guideway, the knife being fed toward the stay-log between each two reciprocations of the latter in order to reach a position where it can cut another sheet of veneer. The knife-carriage comprises a knife-bar L, such bar consisting of a sector-shape end plate *l* at each end,

which end plates are connected by a knife-supporting web l' , an apron l'' , and a table l''' , the web, apron, and table radiating from a common meeting-point. The knife is secured to the web l' , as usual, by bolts l^4 , which pass through the knife and into the web, and the knife is adjusted by bolts l^5 , which bear against its lower or rear edge. Each of the end plates l carries a trunnion l^6 , that has bearing in a slide M, which travels in one of the guideways I. The end plates l are each provided with a lug l^7 , projecting, preferably, from an arc-shaped edge of the adjacent end plate l , and each of the slides M is provided with screws m , that are threaded into the heads of bolts m' , which latter are swiveled in the slides M. The screws m bear against opposite sides of the lugs l^7 , and by movement of said screws the end plates l can be swung upon the trunnion l^6 , so that the angle of the knife to the wood can be readily and positively adjusted. In order to secure the knife in the adjusted position, bolts N are provided to clamp the plates l and the slides M together, such bolts preferably passing through an arc-shaped slot in the slide M, the arc being concentric with the trunnion and passing through a hole in the end plate l . The upper edges of the slides M are preferably made horizontal or parallel to the lower edges of such slides, and a presser-bar carrier O is mounted upon said edges, the said carrier having a slotted flange o , through the slot in which passes a clamping-screw o' , the said screw being threaded into the slide M and serving to clamp the presser-bar carrier to the said slide in any desired position toward or away from the stay-log. The presser-bar carrier is moved toward and away from the stay-log by screws o^2 , one at each end, that are threaded horizontally into the carrier and that are provided with collars o^3 , between which a forked plate o^4 engages the screw, the said plate being secured to the slide M. By turning the screws o^2 the presser-bar carrier can be moved back and forth upon the slides. The presser-bar P is secured to the presser-bar carrier in any desired manner, as by bolts p passing through the presser-bar and threaded through slots in the presser-bar and threaded into the carrier O. Screws p' , threaded in the carrier O, bear against the rear edge of the presser-bar and serve to adjust the position of the presser-bar relative to its carrier. By the above-described means the presser-bar can be readily and accurately adjusted with reference to the cutting edge of the knife. The presser-bar carrier preferably consists of vertical and horizontal flanges o^5 and o^6 , respectively, connected by an inclined web o^7 . Brackets m^2 are formed on or secured to the slides M upon the outer faces thereof, and screw-boxes Q are secured to the said brackets in positions parallel to the slideways.

65 Screws R are provided, one at each end of

the machine, to move the knife-carriage, and such screws have threaded engagement with the screw-boxes Q. The screw-boxes Q are preferably reduced at their ends opposite the brackets to which they are secured, and such reduced portion is threaded to receive a cap q , which is secured thereon. The cap q is also provided with a thread to engage the thread of the screws R and is provided with arc-shaped slots concentric with the screws R, through which slots clamping-screws q' pass, the latter being threaded into the screw-boxes Q. By turning the caps q either forward or backward the screw-threads of the screws R are clamped with any desired degree of firmness between the threads of the screw-box and the said cap, so that wear can be taken up and a perfect fit always secured. When the caps have been adjusted to the desired positions, they are secured by the clamping-screws. The screws R are received in bearings r upon the forward bar a of the frame. The rear end of each screw-shaft R is provided with a shoulder r' , as by reducing the diameter of such shaft, and a screw-sleeve S is mounted upon each screw-shaft R back between the shoulder r' and a sprocket-wheel T, that is secured upon the rear end of the said screw-shaft, the sleeve fitting between the said shoulder and wheel, so that it can turn upon the screw-shaft, but can have no longitudinal motion with reference to the screw-shaft. Each sleeve S is provided with a screw-thread upon its periphery, and such thread is received in and engaged by a thread in a screw-box r^2 , that is secured upon the rear longitudinal bar a of the frame A. The screw-box r^2 is preferably constructed with a cap similar to the cap q , but constructed so that there may be no lost motion between the screw-sleeve and the box. Each sleeve S has formed on it or secured thereto an arm s , said arms being connected by a connecting-rod s' , so that the said arms shall move in unison. One of the arms s' is united by a connecting-rod s^2 to an arm U upon a rock-shaft u , the latter having bearing upon the frame. A second arm u' of the rock-shaft u is united by a connecting-rod u^3 with a lever V, that swings upon a shaft W, having bearings in a bracket w on the frame. The connections between the connecting-rod s^2 and the arm s' and between the connecting-rod u^3 and the lever V are preferably adjustable, so that the degree of movement of the arm s for a given movement of the lever V can be varied. The shaft W is provided with a ratchet-wheel w' , that is engaged by a pawl v on the lever V, so that the said shaft is turned when the lever V is moved in one direction. The shaft W carries a sprocket-wheel w^2 , that is connected by a sprocket-chain w^3 with a sprocket-wheel X upon one of the screw-shafts R. The ratchet-wheel has its teeth turned in such a direction that when the screw-sleeve S is moved by its connections with the lever V to

the front or into the screw-box r^2 the pawl v rides over the teeth of the ratchet-wheel, and when the lever V is moved in the opposite direction the said pawl engages the teeth of the ratchet-wheel. The result is that when the screw-shaft R is turned in the screw-box Q on the knife-carriage, thus drawing the knife-carriage toward the stay-log, a further movement in the same direction is produced by the turning of the screw-sleeve S in the screw-box r^2 and that when owing to swinging of the lever V in the opposite direction the pawl rides idly over the ratchet-wheel and the screw-shaft R is not turned the screw-sleeve S is screwed into the box r^2 and carries with it the screw-shaft R , so that the knife-carriage is retracted from the stay-log. Movements of the lever V thus outwardly causes the knife-carriage to advance toward the stay-log two steps and to retract one step. The two screw-sleeves S are caused to move in unison by the connecting-rod s' , and the screw-shafts R are caused to turn together by a sprocket-chain Y , that runs over the sprocket-wheels T on the screw-shafts. The sprocket-chain Y can be tightened in any desired manner, as by idler sprocket-wheels t , that engage the upper and lower strands, respectively, of the sprocket-chains and are supported in a bracket t' , secured to the frame. The knife-carriage is run back away from the stay-log to permit securing a new block E to the stay-log, either by turning the screw-shafts R by hand or in any other desired manner, as by connecting a belt-pulley through a friction-clutch with one of the shafts R , so that such shaft can be revolved by power.

To limit the travel of the knife-carriage, rods Z are secured to the frame parallel to the guideways I and preferably pass through the brackets m^2 , and such rods have stops secured thereon, such as lock-nuts. The lock-nuts can be adjusted so that the knife-carriage cannot be run away from the stay-log beyond the desired position and so that such carriage cannot be run closer to the stay-log than is safe. The level of the cutting edge of the knife is preferably that of the centers on which the cranks C turn, and it is preferably so chosen that as the crank-pins approach the lower limits of their travel the knife will be cutting the upper edge of the block. Then when the block is secured to the stay-log so that the heart or softer portion thereof is at the upper edge of such block the block will be traveling in a position very much inclined toward the horizontal—*i. e.*, nearly approaching a horizontal direction—so that the relative motion of the knife and block will be largely parallel to the edge of the knife, and a strong shearing action will occur, which action is most favorable to the cutting of the softer portions of the block. To balance the stay-log, counterweights can be secured, pref-

erably, either to the cranks themselves or to the gear-wheels F .

In the operation of my veneer-cutting machine, the knife-carriage K being in a position away from the stay-log, the block E is secured to the stay-log and the knife-carriage is run up close to the stay-log. The shaft H is then set in motion, thus causing the shafts B and the cranks C to revolve. This causes the stay-log to move above and below the knife and to have during the lower portions of its travel the drawing action, which has been before described. The lever V is then caused to oscillate either by hand or by power, as desired, and when its upper end is swung toward the machine it causes the screw-shafts R to turn upon their axes and causes the screw-boxes Q to travel upon the threads on the screw-shafts, thus drawing the knife-carriage toward the stay-log. The same movement of the lever V causes the shaft u to oscillate, which motion is communicated to the arms s , thus causing the sleeves S to turn in the screw-boxes r^2 . This causes the said sleeves to travel away from the stay-log and to carry the screw-shafts R bodily with them, thus causing a motion of the knife-carriage toward the stay-log in addition to the motion caused by the travel of the screw-boxes Q upon the screw-threads of the screw-shafts. The sheet of veneer is then cut during the downward motion of the stay-log, and in order to prevent the dragging of the knife over the surface of the block of wood during the upward motion of the stay-log the lever V is swung away from the machine, and during this motion the pawl v travels idly over the ratchet-wheel, and the shaft u is rocked so as to screw the sleeves S into the boxes r^2 , which causes a bodily movement of the screw-shafts R , so as to carry the knife-carriage away from the stay-log. In actual practice I have found the motion which the above-illustrated machine gives to the block of wood with reference to the knife a most desirable one, the machine permitting the draw to be suited to the firmness of the respective portions of the block as they are being cut. I have also found the mechanism for moving the knife-carriage and for revolving the knife during the return stroke to be positive in its action and not easily worn, and when wear takes place I find that I can take it up, so that a positive action can be maintained. By the use of sprocket-wheels and a sprocket-chain to connect the screw-shafts R instead of the bevel-gearing I find that the motions of the screw-shafts can be maintained alike, so that the knife-carriage remains parallel to the stay-log. I also find this of great advantage in connection with my mechanism for revolving the knife during the return stroke, since all play is avoided, and thus the small degree of turning of the screw-shafts which it is prac-

tical to effect by means of swinging arms, such as the arms s, is sufficient to secure the desired release. I have found the means for limiting the travel of the knife-carriage to be desirable and to prevent either running the said carriage off its guides or off the screw-shafts or running the said carriage so close to the stay-log as to permit the stay-log to hit the carriage. The means for adjusting the angle of the knife to the wood I have found to be easy to operate and positive in its action and to be desirable, because the angle of the knife to the wood should be varied with the wood and with the thickness of the veneer to be cut. It is obvious that the same relative movement of the knife through the block would be obtained if the stay-log were stationary and the knife given a circular motion instead of the stay-log.

Having thus described my invention, what I claim is—

In a veneer-cutting machine, the combination of a stay-log, a knife-carriage, screw-rods on one of said parts and screw-boxes on the other of said parts for drawing said parts together, screw-sleeves, each of which is jour-

naled on one of said screw-rods, shoulders on said rods for preventing movement of said screw-sleeves longitudinally of said rods, screw-boxes mounted on the frame of the machine, each of which screw-boxes is provided with an internal thread adapted to engage the thread on its respective screw-sleeve, each screw-box being also provided with a cap having a thread that is adapted to engage the thread on the screw-sleeve and also having a thread that is adapted to engage a thread on its screw-box, bolts threaded into said screw-boxes and passing through arc-shaped slots in said caps, whereby the threads in said screw-boxes and caps can be adjusted relative to each other to engage and fit opposite sides, of the threads of said screw-sleeves, and whereby said screw-boxes and caps can be secured in adjusted position by means of said bolts.

In testimony that I claim the foregoing I have hereunto set my hand.

CHESTER BYNON ALLEN.

Witnesses:

R. M. WATKINS,
JNO. H. BOWMAN.