No. 645,329. Patented Mar. 13, 1900.

L. PLATT.

WOODWORKING MACHINE.

(Application filed Feb. 9, 1898.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1.

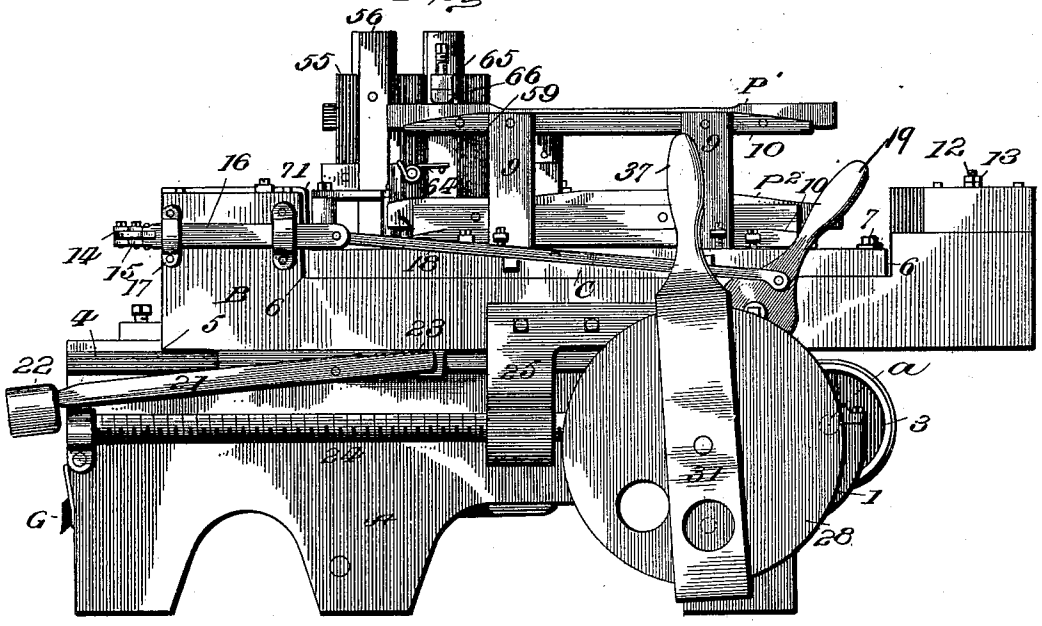
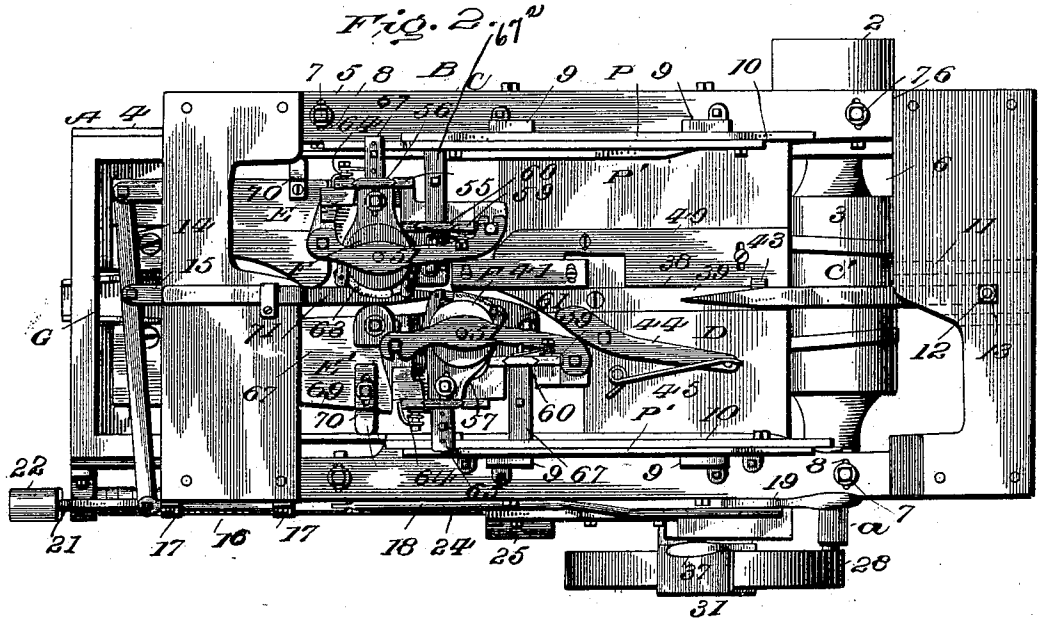


Fig. 2.



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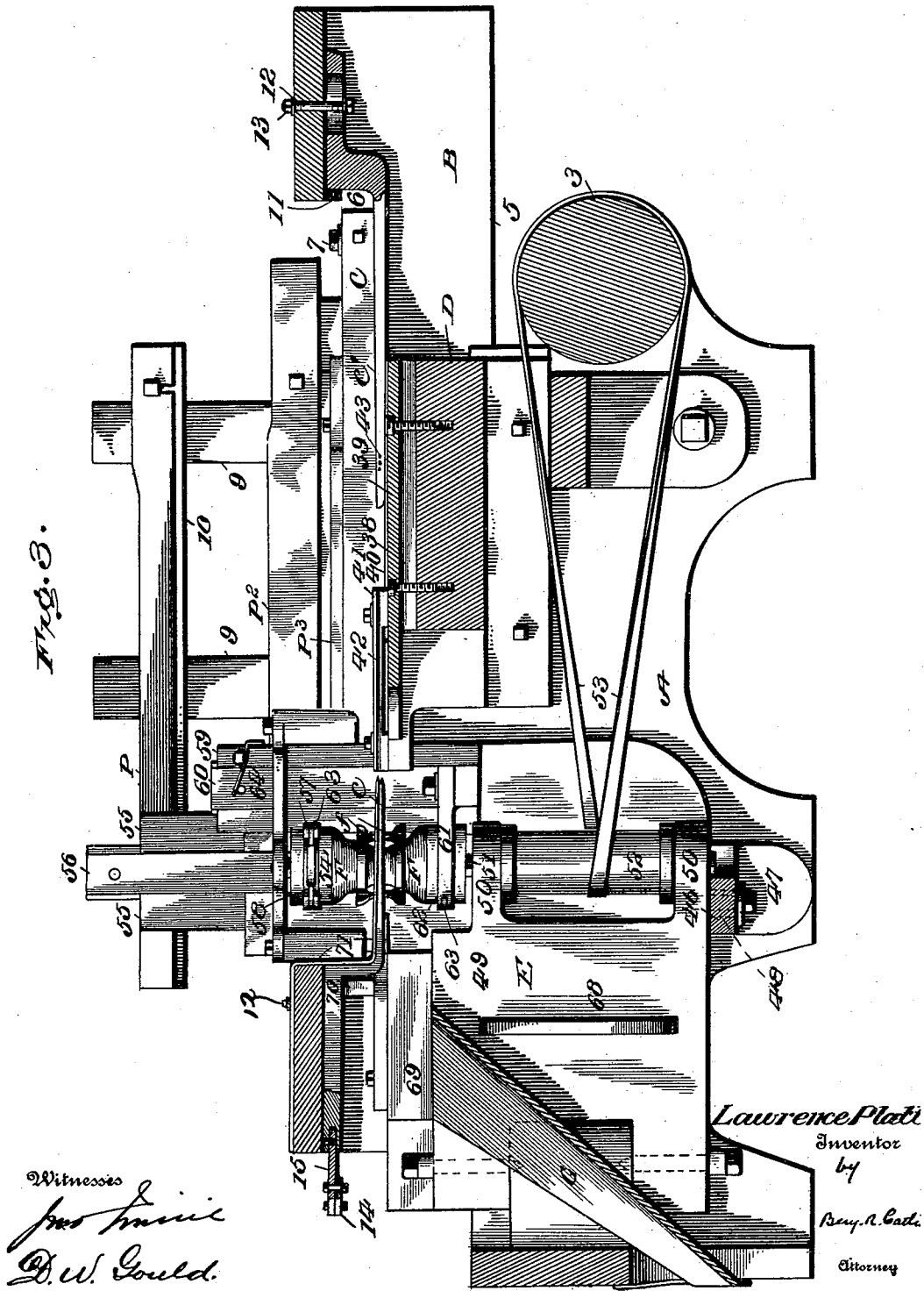
(No Model.) 4 Sheets—Sheet 2.

Fig. 3.



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(No Model.) 4 Sheets—Sheet 3.

Fig. 4.

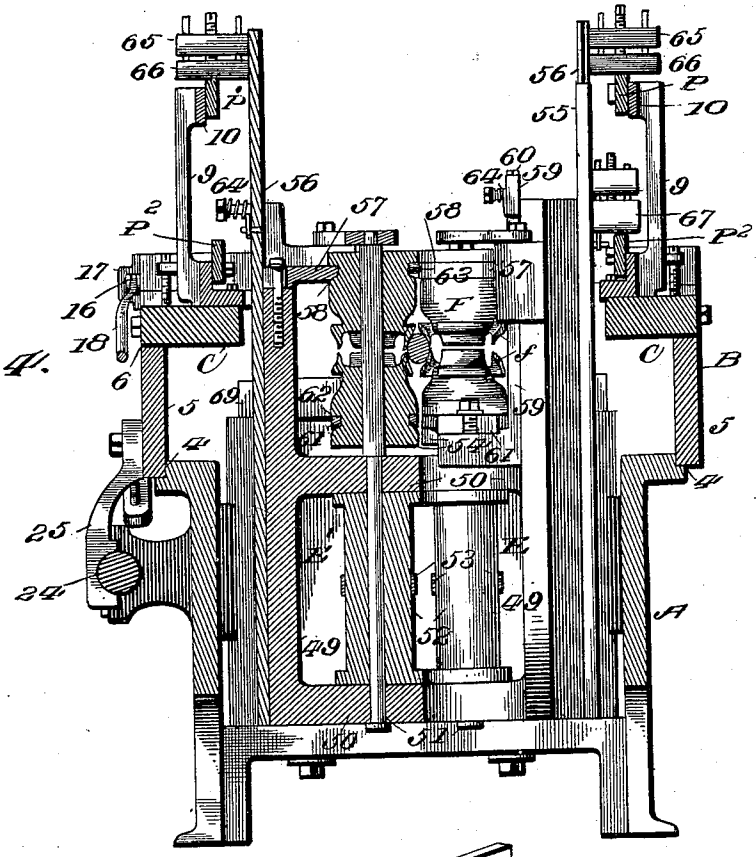


Fig. 8.

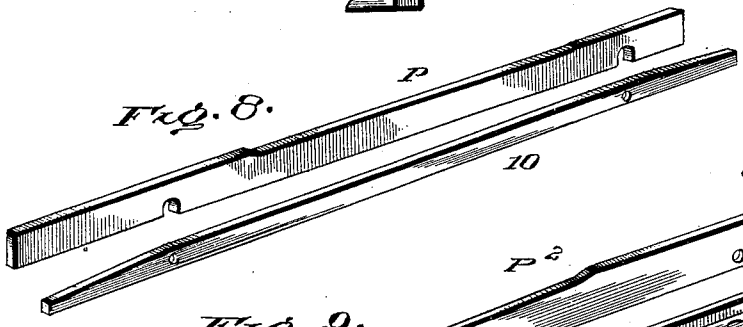
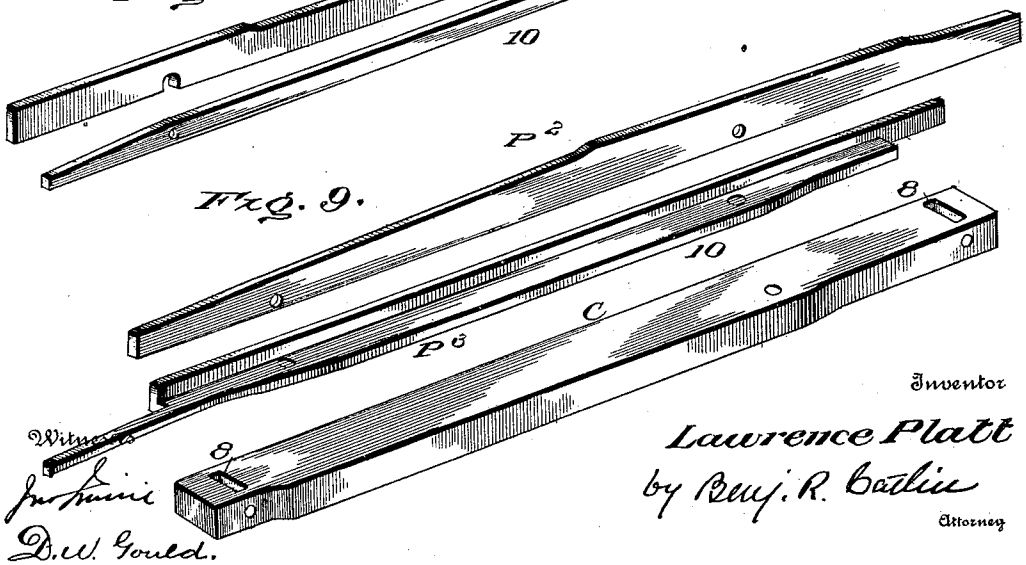


Fig. 9.



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WOODWORKING MACHINE.

(Application filed Feb. 9, 1898.)

(No Model.) 4 Sheets—Sheet 4.

Fig. 5.

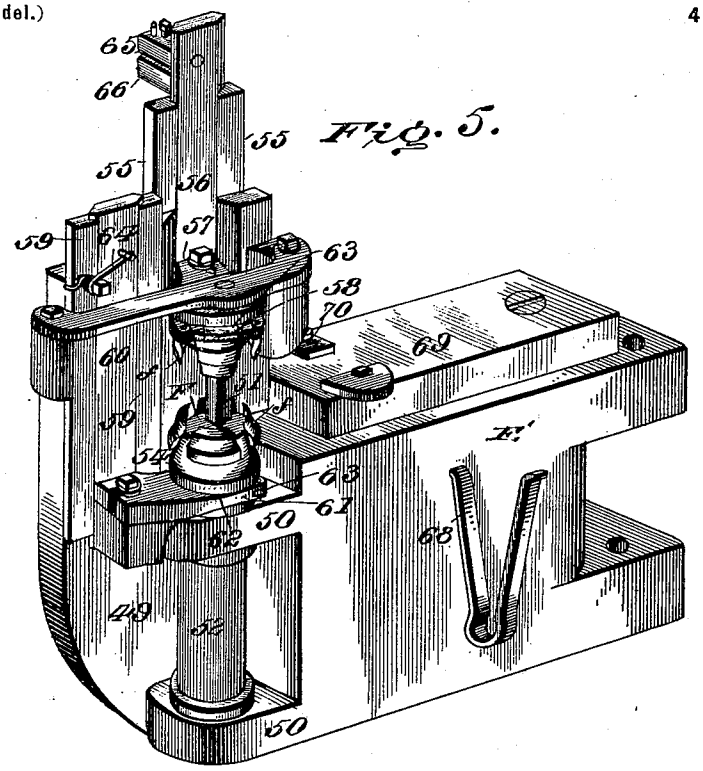


Fig. 6.

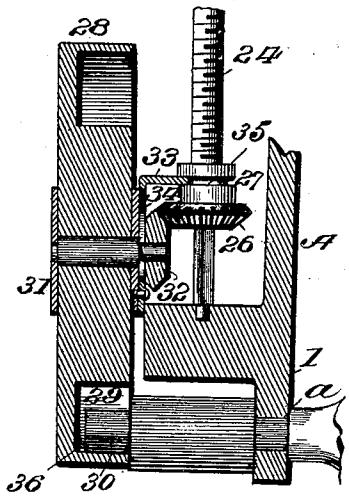
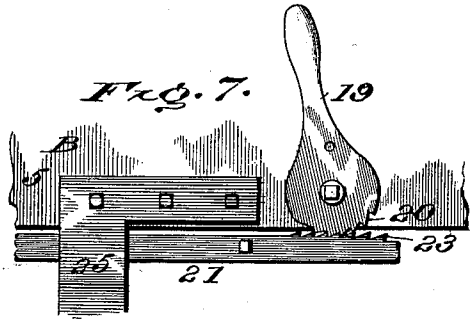


Fig. 7.



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UNITED STATES PATENT OFFICE.

LAWRENCE PLATT, OF PATTON, PENNSYLVANIA, ASSIGNOR TO LUTHER M. PATTERSON, BENJAMIN F. WISE, SAMUEL WORRELL, ANNIE MINNICK WORRELL, AND JOHN BOYCE, OF SAME PLACE, AND WILLIAM BOYCE, OF BRISBIN, PENNSYLVANIA.

WOODWORKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 645,329, dated March 13, 1900.

Application filed February 9, 1898. Serial No. 669,720. (No model.)

To all whom it may concern:

Be it known that I, LAWRENCE PLATT, a citizen of the United States, residing at Patton, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Woodworking-Machines; and I do hereby 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.

My invention relates to an improvement in woodworking-machines, having reference particularly to machines of this class in which the work to be accomplished is of an irregular form, such as the shaping of spokes, handles, and the like.

One object of my invention is the provision of novel means for automatically operating the traveling carriage common to machines of this nature, the operating means being so arranged that the speed of the carriage may be easily and quickly regulated as required.

Another object is the production of cutter-frames, upon each of which a set of two cutters is mounted, the frames being pivotally secured to the bed of the machine and automatically adjustable to regulate the horizontal positions of the cutters with relation to the blank being operated upon.

Another object is the production of means for automatically and independently adjusting each cutter vertically.

Another object is the production of means for automatically releasing the finished article when the carriage has reached the limit of outward travel.

Other objects will be apparent from the following details of construction and combinations of parts, which will first be described in connection with the accompanying drawings and then pointed out in the claims.

Figure 1 of the drawings is a view in elevation of a machine constructed in accordance with my invention. Fig. 2 is a plan view of the same. Fig. 3 is a vertical central sectional view of the machine. Fig. 4 is a vertical transverse section of the machine. Fig. 5 is a perspective view of one of the cutter-frames. Fig. 6 is a sectional detail, partly in elevation, illustrating the means for operating the carriage. Fig. 7 is a detail in elevation of the means for automatically releasing the finished article from the machine. Figs. 8 and 9 represent perspective views of the patterns for use with the machine, the pattern-frame being also shown.

Referring to the drawings, A represents the bed of the machine, comprising the usual heavy metal framework. At the rear end of the bed, in suitable bearings 1, I journal the main shaft *a*, from which the various parts of the machine are driven, the shaft having the usual belt-pulley 2 at one end and being centrally provided with a drum 3, over which the cutter-operating belts pass, as hereinafter described.

B represents the carriage, comprising a rectangular metal frame adapted for longitudinal movement on the bed A, the outer edges of the side strips of the bed being cut out at 4 to receive the lower edges of the side strips 5 of the carriage. The side strips of the carriage are cut out for a considerable portion of their length at 6 to receive the pattern-frame C, one on each side of the carriage. These pattern-frames are adjustably secured to the carriage by bolts 7, which pass through slots 8 in the frames and take into the carriage, all as clearly shown in Fig. 2. Standards 9, rising from each pattern-frame, are connected at their upper and lower ends by bars 10, to which the patterns for controlling the vertical movement of the cutters are removably secured.

Centrally of the end strips of the carriage I secure the head and tail chucks *c* and *c'*, respectively, for holding the blank during the operation of the machine. These chucks are each longitudinally adjustable to accommodate different-sized blanks by means of guides 11, between which the chucks slide, a slot in each chuck through which its securing-bolt 12 passes permitting the necessary movement. The tail-chuck *c'* is adjustable by hand, a nut 13 on the upper end of the se-

curing-bolt 12 maintaining the chuck in any desired position. The head-chuck *c* is adjustable through lever mechanism, comprising a lever 14, pivotally secured to the under side of the front end strip of the carriage and centrally connected to the head-chuck by a link 15, the free end of lever 14 being connected to one end of a bar 16, sliding in guides 17, secured to the carriage, the other end of bar 16 being attached to the forward end of a rod 18, the rear end of which is pivoted to a hand-lever 19, the lower end of the hand-lever being rounded and formed with a series of serrations 20, all as clearly shown in the drawings. On the side of bed A, I pivotally secure a lever 21, its forward end being provided with a weight 22, its rear end formed with serrations 23, which are adapted to engage with the serrations 20 on hand-lever 19 to operate the head-chuck, as hereinafter described.

The mechanism for operating the carriage will now be described. Journaled in suitable bearings attached to the bed A is a screw-rod 24, and to the carriage I secure a follower 25, adapted to partially encircle the rod 24 and formed interiorly with screw-threads for engaging the threads on the rod 24, whereby revolution of the rod will cause longitudinal movement of the carriage. The rear end of rod 24 is reduced in size and squared, and on this squared portion is loosely placed a bevel gear-wheel 26, having a forwardly-projecting collar 27. A double friction-wheel 28, having two concentric bearing-surfaces 29 and 30, is mounted in a suitable frame 31, pivoted to the side of bed A, as shown. On the inner side of the frame 31 the shaft of the friction-wheel is provided with a bevel gear-wheel 32, designed to be at all times in operative engagement with the bevel gear-wheel 26. A shifting plate 33 is pivotally secured on the inner portion of frame 31, its free end being bent at a right angle and slotted, this slotted portion 34 snugly embracing the collar 27 of gear-wheel 26, preferably seating in a recess 35, formed therein. The end of the main shaft *a*, adjacent to the friction-wheel 28, is provided with a laterally-projecting friction-roller 36, the free end of which is somewhat reduced to enter the space between the bearing-surfaces 29 and 30 of the friction-wheel, which space is of such width that the normal position of the roller may be free from contact with either surface. Through a hand-lever 37, projecting from frame 31, the friction-wheel 28 may be moved so as to cause either bearing-surface to contact with the roller 36, thereby imparting motion to screw-rod 24 and moving the carriage, it being understood that the shifting plate 33 maintains engagement between the gear-wheels 32 and 26 during the movement of frame 31.

On the bed A, near the rear end, I position what I term a "centering-block" D, it being secured to the bed above the main shaft *a*, as shown. Centrally of the block I form a longitudinal recess 38, a cover 39 for the recess being adjustably secured therein by screws, as shown. By adjusting the vertical position of the cover I am enabled to accommodate blanks of different sectional dimensions, as will be evident. Alongside the recess 38 (hereinafter termed the "throat") I secure a guide 41, formed with a side groove 42, designed to receive a pin 43, projecting laterally from the arm of the tail-chuck *c'*, maintaining the alinement of the chuck in operation. A presser-arm 44, controlled by a spring 45, is pivoted to block D, opposite guide 41, the forward end of the presser-arm being adapted to press against and assist in maintaining the alinement of the blank, all as clearly shown in Fig. 2.

E and E' represent the frames upon which the cutters are mounted, being pivotally secured at their forward ends to the bed A and adjustably secured at their rear ends to a cross-brace 46 of the bed by means of a pin 47, passing through a slot 48 in the brace. I shall describe but one of the frames, as they are identical in construction, with the exception that frame E' is somewhat longer than frame E, so as to bring the respective sets of cutters into contact with the blank at points diagonally opposite, thereby enabling the cutters themselves to assist in maintaining the alinement of the blank.

The rear end of the frame is cut out, so as to leave a side wall 49 and two horizontal strips 50, in which latter the cutter-shaft 51 is journaled, the upper portion of the shaft being triangular in cross-section. On the cutter-shaft, between the strips 50, I secure a belt-pulley 52, over which and over the drum 3 on the main shaft *a* an endless belt 53 passes, imparting motion to the cutter-shaft. On the triangular portion of the cutter-shaft I loosely mount two cutters F, two in number, one above the other, each comprising a collar 54, reduced at its lower end and carrying any suitable form of blade *f*. As the cutters are formed with central openings corresponding in sectional formation to that of the cutter-shaft, a vertical movement of the cutters is permitted without interfering with their revolution, as will be evident. On the outer side of wall 49 of the cutter-frame I secure vertical guides 55, between which a cutter-rod 56 slides, this rod being provided on its lower end with a forwardly-projecting yoke 57, the arms of which enter a recess 58 in the collar 54 of the upper cutter, similar guides 59 being secured on the inner side of wall 49, in which a cutter-rod 60 operates, the rod carrying a yoke 61, designed to engage the lower cutter by entering a recess 62 therein. By having the yokes 57 and 61 adjustably secured to their respective rods and forming the recesses 58 and 62 in the respective collars of angular shape it is evident that I can adjust the yokes to take up all lost motion in the operation of the cutters, the yoke-arms being beveled to better facilitate the adjustment.

Connecting the arms of each yoke is what I term a "latch" 63, which is designed to be wrapped in a felt covering. I may thus oil the cutters through the felt, it also serving as a dust-protector. Each cutter-rod is elevated against the stress of a coil-spring 64. Projecting laterally from each cutter-rod are arms 65, carrying adjustable shoes 66, adapted to bear, respectively, upon patterns P and P', removably secured to the bars 10 of the pattern-frames C. The movement of the carriage will thus cause an independent vertical movement of the cutters, causing them to act on the blank in accordance with the form of the pattern. The cutter-frames are each provided with laterally-projecting pins 67, adapted to bear against and follow the forms of patterns P^2, also secured to the pattern-frames C, thus giving a horizontal adjustment to the cutters, as will be evident. A leaf-spring 68 normally forces the cutter-frames apart.

On top of each cutter-frame I pivotally secure an alinement-block 69, the horizontal position of which is adjusted through a pattern P^3, secured to the pattern-frame, each of the alinement-blocks being provided with a presser-arm 70, adapted to bear against and maintain the alinement of the blank being operated upon, the presser-arm on frame E being spring-controlled, while the presser-arm on frame E' is simply adjustable by means of a set-screw.

To the forward portion of the bed between the cutter-frames I secure the chute G, designed to guide the finished articles from the machine into any suitable receptacle.

The operation of my invention is as follows: Assuming the various parts of the machine to be assembled, as above described, the blank is first laid in the adjustable throat 38 and centered, the tail-chuck c^8 is moved forward to engage the blank and secured in position. Then by moving hand-lever 19 toward the rear the head-chuck c will be caused to snugly engage the head of the blank, as will be evident. The machine being now started, the hand-lever 37 is moved to cause the bearing-surface 29 to engage the friction-roller 36, thereby causing a revolution of screw-rod 24 and moving the carriage. As the carriage advances the cutters act upon the blank, shaping it to conform to the pattern, as hereinbefore described. Just before the carriage reaches the limit of forward travel the serrations 20 on the lower end of hand-lever 19 will be engaged by the serrations 23 on the end of weighted lever 21, and a continued further movement of the carriage rocks the lever 19 and through the rod 18 and lever 14 moves the head-chuck forward away from the finished article, releasing the latter, which drops down into the chute G. To the carriage, slightly above the head-chuck, is a sleeve 71, which prevents the head-chuck in movement from drawing the finished article with it. The hand-lever 37 is then moved in the opposite direction, causing the bearing-surface 30 of the friction-wheel to engage the friction-roller 36, reversing the direction of revolution of the screw-rod 24 and causing the carriage to travel back to the normal position ready for a new blank.

It will be seen from the above construction that by means of the friction-wheel the speed of the carriage may be easily and quickly controlled in order to gage the speed of the advancing blank, as hard material will be better worked by a slow speed.

After the blank has been placed in position the entire working of the machine is controlled through the levers 19 and 37, as the operations of the cutters are automatically governed by the various patterns, and the release of the finished article is automatically accomplished by the forward movement of the carriage.

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

1. In a woodworking-machine, the combination with the bed, of a cutter-frame pivotally secured thereto, said frame comprising a block formed at its forward end with vertical guideways, guide-rods movable in said ways, a cutter-shaft revolubly mounted in the block, a plurality of cutter-heads carrying knives loose on said shaft, and yokes secured one to each cutter-rod and engaging one of the cutter-heads, substantially as described.

2. In a woodworking-machine, the combination with the bed, of a cutter-frame pivotally secured thereto, said frame comprising a block formed at its forward end with vertical guideways, guide-rods movable in said ways, a cutter-shaft revolubly mounted in the block, a plurality of cutter-heads carrying knives loose on said shaft, yokes secured one to each cutter-rod and engaging one of the cutter-heads, and an alinement-block movably supported by the cutter-frame, substantially as described.

3. In a woodworking-machine, the combination, with the bed and the main shaft journaled therein, of two cutter-frames pivotally secured to the bed and each carrying a cutter-shaft, a plurality of cutters loosely placed on the shaft, means for automatically adjusting the cutters, one of said cutter-frames being longer than the other so as to bring the respective sets of cutters into contact with the blank at points diagonally opposite, thereby enabling the cutters to assist in maintaining the alinement of the blank during the operation of the machine, substantially as described.

4. In a woodworking-machine, the combination, with the bed and a carriage movable thereon, said carriage carrying a blank to be operated upon, of cutter-frames carrying a plurality of cutters arranged in sets, means for independently adjusting each cutter of each set, and an alinement-block carried by

each cutter-frame for maintaining a correct position of the blank during the operation of the machine.

5. In a woodworking-machine, the combination, with the bed and a carriage movable thereon, said carriage carrying a blank to be operated upon, of cutter-frames carrying a plurality of cutters arranged in sets, means for independently adjusting each cutter of each set, an alinement-block carried by each cutter-frame, and means for adjusting the blocks automatically.

6. In a woodworking-machine, the combination, of a bed, a carriage supported by and movable on the side strips of the bed, the side strips of the carriage being cut out for a considerable portion of their length, the pattern-frames carrying a plurality of independently-removable patterns adjustably secured in said cut-out portions, whereby the configuration of the finished article may be altered without removing the pattern by a simple adjustment of either pattern-frame, substantially as described.

7. In a woodworking-machine, a bed, a carriage movable on and supported by the bed, a screw-shaft carried by the bed and adapted to actuate a follower carried by the carriage, a friction-roller projecting from the main shaft, a double friction-wheel mounted in a suitable frame pivoted to the bed, and having gearing in mesh with gearing on the screw-shaft, said double friction-wheel frame being so pivoted as to permit either friction-surface of the double friction-wheel to be forced into contact with the friction-pulley on the main shaft, whereby the operator may control the speed and direction of travel of the carriage.

8. In a woodworking-machine, in combination with a bed with a carriage movable thereon, said carriage carrying a blank to be operated upon, of a centering-block secured to the bed near its front end, said block being formed with a throat having an adjustable cover, as and for the purposes stated.

9. In a woodworking-machine, the combination, with a bed and a main shaft journaled therein, of a carriage, a head-clutch and a tail-clutch mounted on the carriage at opposite ends thereof, lever mechanism operated by hand-lever for moving the head-clutch, the lower end of the hand-lever being formed with a series of serrations, and means carried by the bed to engage the serrations on and actuate the hand-lever in the forward movement of the carriage, whereby said head-clutch is automatically withdrawn from the blank.

10. In a woodworking-machine, the combination, with a bed and a main shaft journaled therein, of a carriage, a head-clutch and a tail-clutch mounted on the carriage at opposite ends thereof, lever mechanism operated by hand-lever for moving the head-clutch, the lower end of the hand-lever being formed with a series of serrations, and a weighted lever pivoted to the bed and formed with a series of serrations to engage the serrations on the hand-lever in the forward movement of the carriage, whereby said head-clutch is automatically withdrawn from the blank.

In testimony whereof I affix my signature in presence of two witnesses.

LAWRENCE PLATT.

Witnesses:
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