

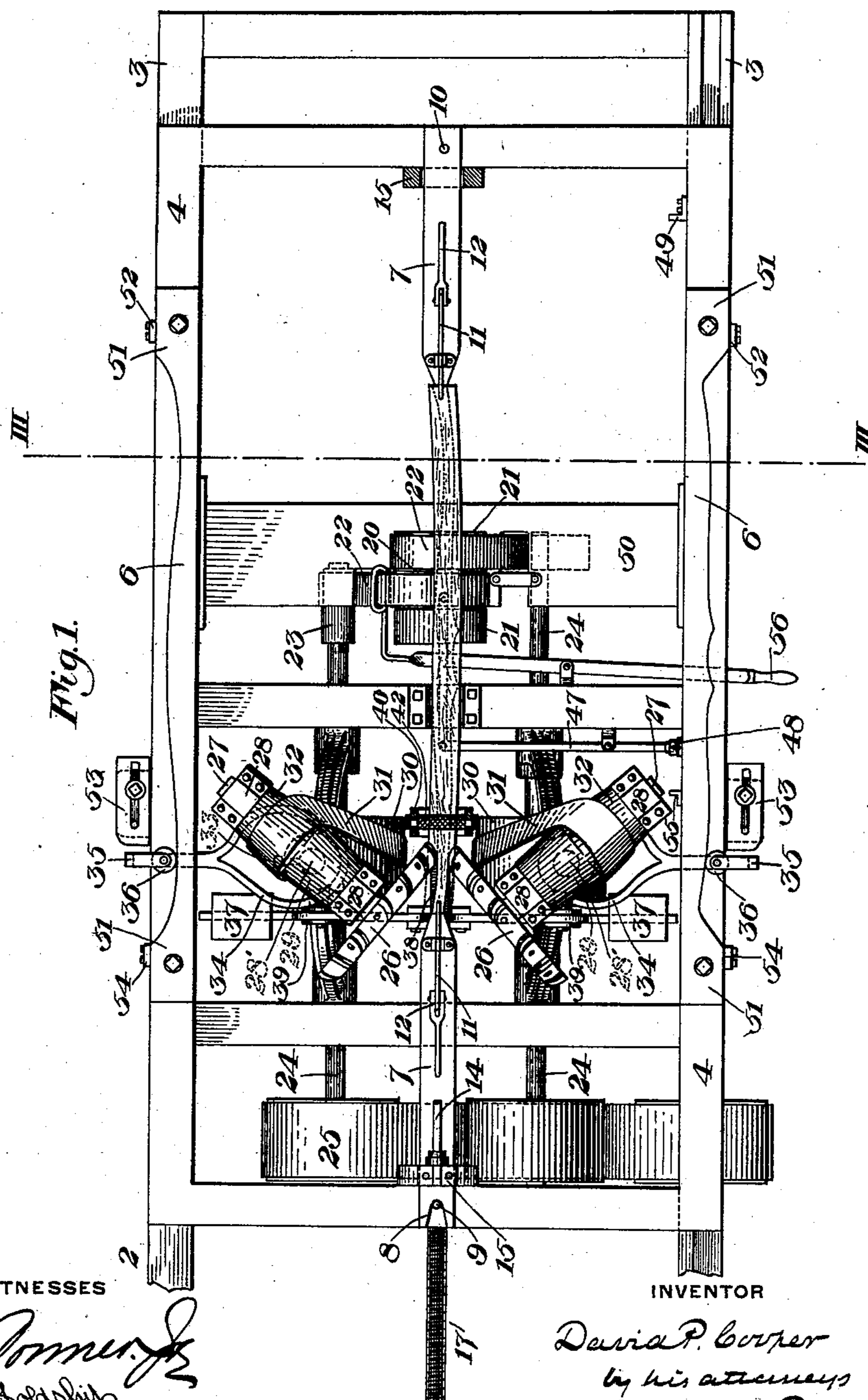
(No Model.)

3 Sheets—Sheet 1.

D. P. COOPER.  
WOODWORKING MACHINE.

No. 603,261.

Patented May 3, 1898.



WITNESSES

*T. A. Cooper*  
*J. J. Halden*

INVENTOR

*David P. Cooper*  
*by his attorneys*  
*Bakewell, Bakewell*

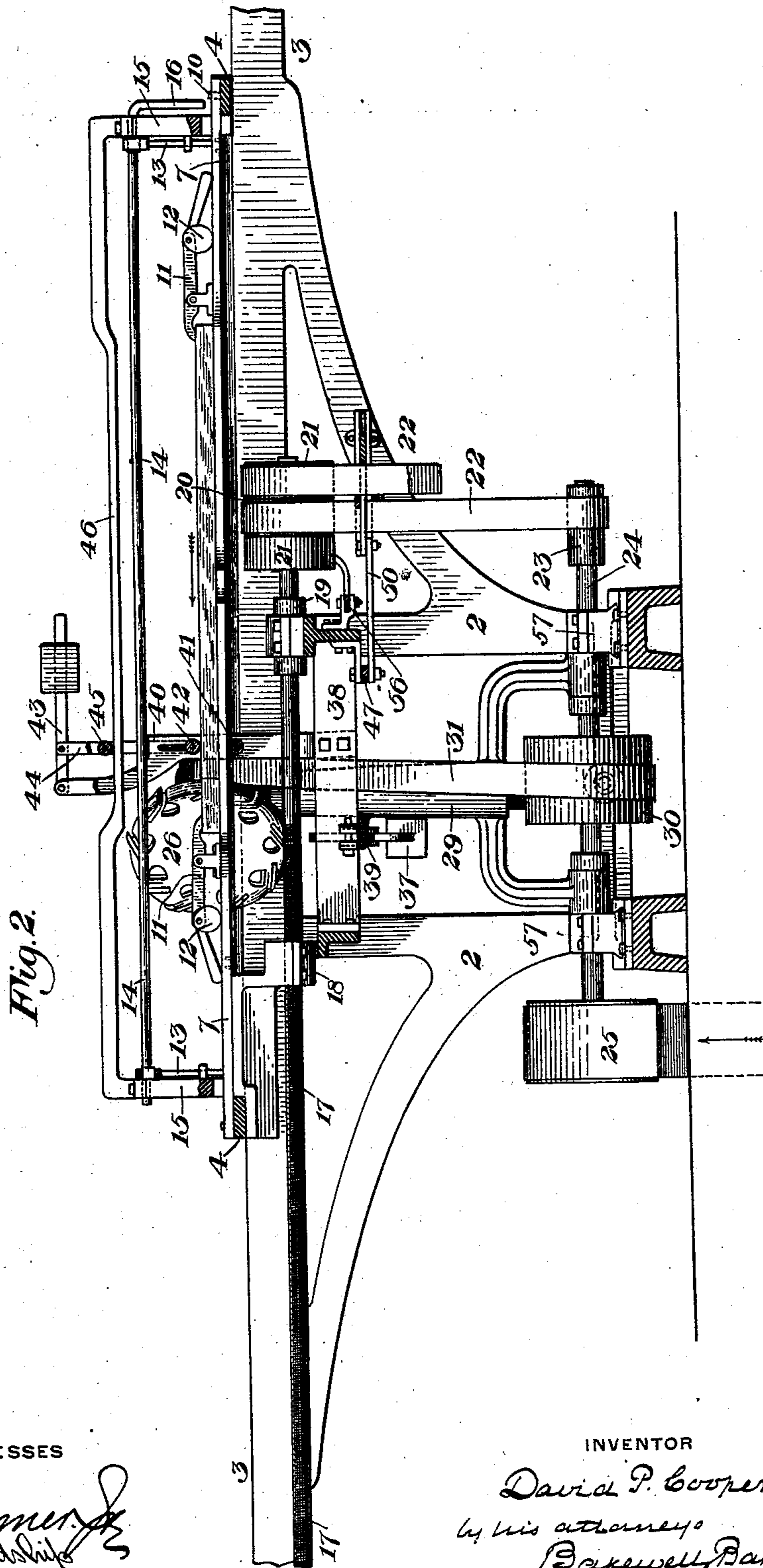
(No Model.)

3 Sheets—Sheet 2.

D. P. COOPER.  
WOODWORKING MACHINE.

No. 603,261.

Patented May 3, 1898.



**WITNESSES**

T. R. Connor  
19.9. Woodship

INVENTOR

David P. Cooper  
by his attorneys  
Bakewell, Bakewell

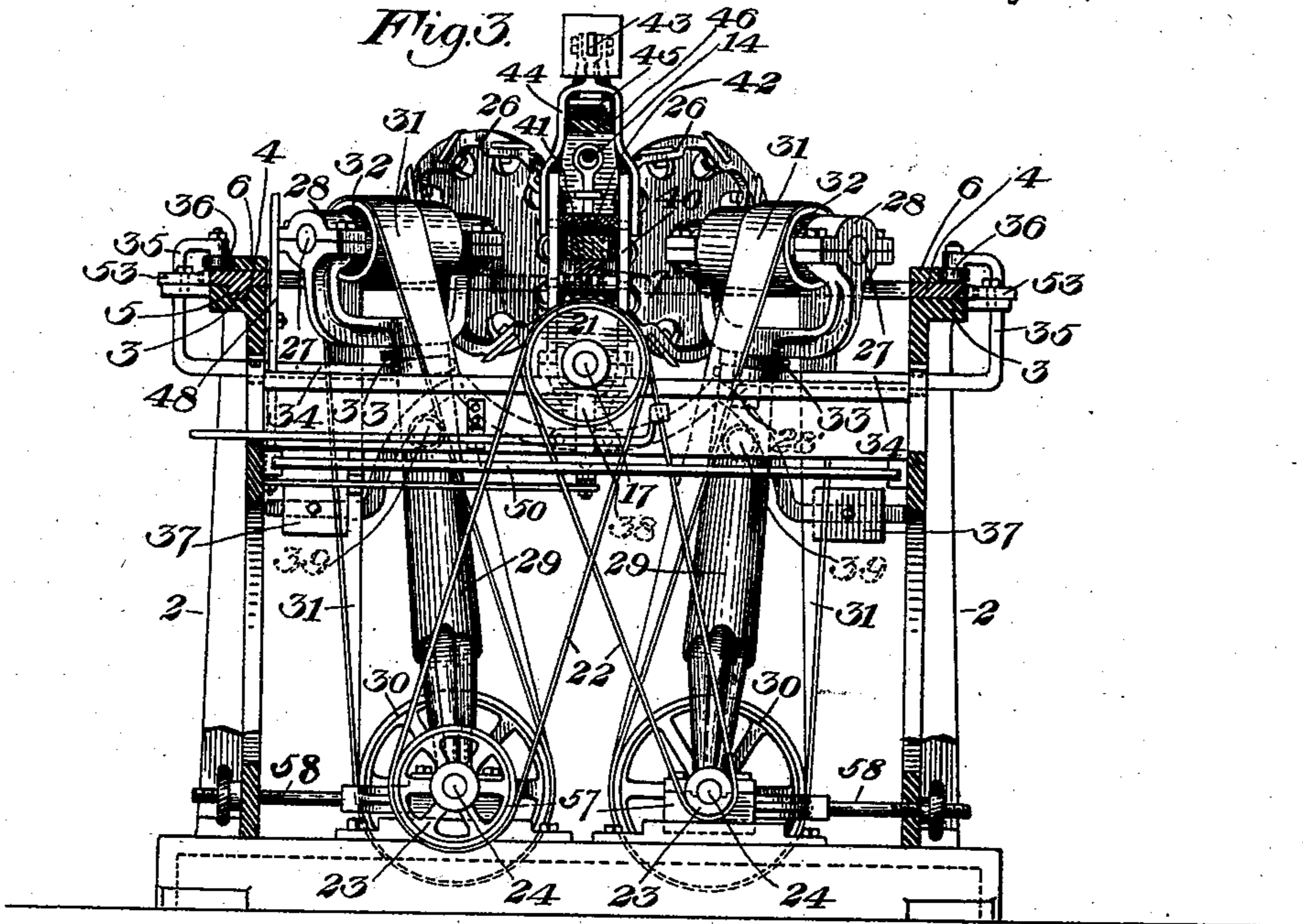
(No Model.)

3 Sheets—Sheet 3.

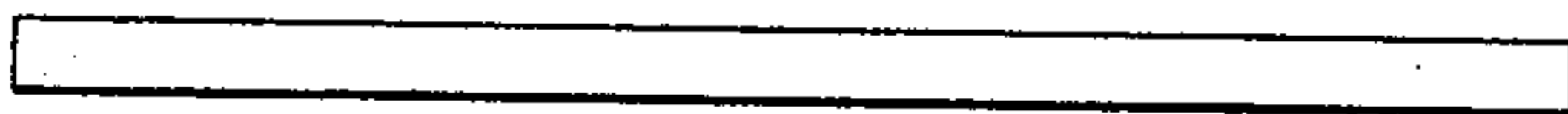
D. P. COOPER.  
WOODWORKING MACHINE.

No. 603,261.

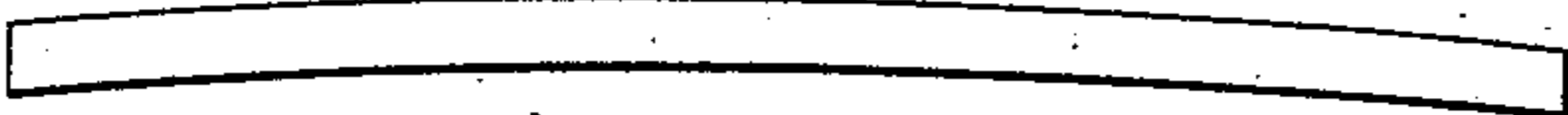
Patented May 3, 1898.



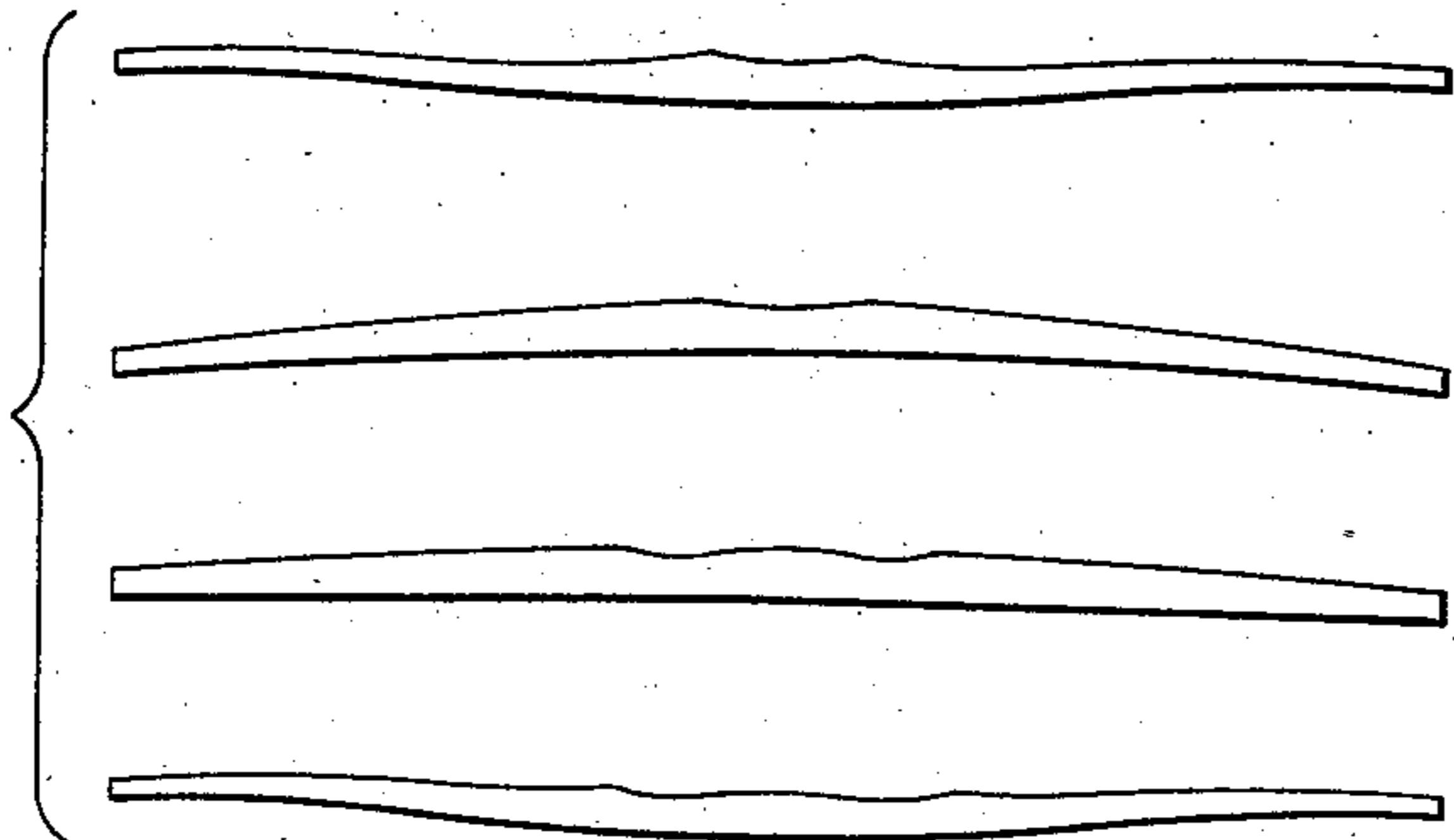
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



WITNESSES

*J. A. Comer*  
*J. S. Holdship*

INVENTOR

*David P. Cooper*  
*by his attorneys*  
*Bakewell, Bakewell*

# UNITED STATES PATENT OFFICE.

DAVID P. COOPER, OF STRUTHERS, OHIO.

## WOODWORKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 603,261, dated May 3, 1898.

Application filed October 30, 1895. Renewed October 4, 1897. Serial No. 654,037. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID P. COOPER, of Struthers, in the county of Mahoning and State of Ohio, have invented a new and useful Improvement in Woodworking-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view of my improved machine. Fig. 2 is a longitudinal section of the same. Fig. 3 is a cross-section on the line III III of Fig. 1. Figs. 4 and 5 show different forms of blanks to be shaped, and Fig. 6 shows some of the shapes produced by my machine.

My invention relates to the shaping of wooden bars, such as carriage-woodwork, &c., which are given a particular configuration on two opposite sides or edges.

Heretofore where rotary cutters have been employed in machines of this character they have been rotated in a plane parallel with that of the blank, and hence will tear ahead of the cut, especially where the curve extends outwardly toward the edge of the blank. My machine overcomes this objection; and it consists in a machine having rotary cutters which rotate transversely to the plane of the blank in forming its opposite sides and are moved in or out by rollers which pass over patterns having the desired contour.

It also consists in the construction and arrangement of the parts, as hereinafter more fully described, and set forth in the claims.

In the drawings, in which similar numerals indicate corresponding parts, 2 represents the general frame of the machine, having two upper longitudinal bars 3, forming rests for a reciprocating frame 4, one of whose side bars is provided with a longitudinal tongue 5, which moves with a corresponding groove in one of the bars 3, thus holding the frame 4 in position.

To the upper faces of the bars 3 are secured, by bolts or similar means, the patterns 6, each having on its outer edge the contour to be given to the corresponding edge of the blank, as shown in Fig. 1. To the end bars of the sliding frame is secured the clamping-bar 7, having at one end a V-shaped slot 8, which engages a pin 9 upon one end bar, while a pin

10 drops through a hole in the other end into a registering hole in the other end bar. The intermediate portion of this clamping-bar is preferably of the same shape as and slightly narrower than the form to be given to the blank, which is held in place thereon by the clamping-levers 11, pivoted upon the clamping-bar and engaging the end portions of the blank; the levers being operated by cams 12 bearing upon the bar.

The bar is securely clamped to the frame by pins 13, connected to eccentrics upon a shaft 14, supported in bearings 15 upon the sliding frame and having an operating-handle 16. The frame 4 is moved back and forth by means of a screw-threaded shaft 17, passing through a nut 18, secured to the frame, this shaft having a bearing 19 and provided with a driving-pulley 20 and two loose pulleys 21 on each side thereof. About the pulleys pass belts 22, extending from pulleys 23 upon two shafts 24, which are driven in opposite directions by a belt 25, extending under a pulley upon one and over a pulley upon the other, as shown in Fig. 1.

The rotary cutters 26 are each carried upon a rotary shaft 27, mounted in bearings 28 upon forks extending from a stem 28', adjustably carried in a swinging tubular standard 29, having a forked lower end trunnioned upon wrists on the journal-box. Between the forks of the standards 29 are pulleys 30, from which belts 31 extend to pulleys 32, mounted upon the shafts 27 between their bearings.

The cutters are preferably arranged at an angle of about forty degrees to the blank, though they may be adjusted to any desired angle by turning the stems 28' in the tubular standards, they being secured in adjusted position by set-screws 33.

The tubular standards are automatically moved back and forth by yokes 34, bolted to them, these yokes having U-shaped supports 35, provided with rollers 36, bearing upon the patterns 6, the rollers being held against them by curved weighted links 37, pivoted to a central portion 38 of the frame and bearing upon rollers 39, mounted upon studs projecting from the standards 29.

To hold the blank and its carrying-bar securely in position, I provide the vertical standards 40, having the roller 41 mounted

in stationary bearings therein and bearing upon the lower face of the clamping-bar, while an upper roller 42, mounted in a slotted bearing therein, is held yieldingly upon the upper face of the blank by a weighted lever 43, having a forked link 44 engaging the projecting ends of the roller-shafts, this forked link having a roller 45 resting upon a longitudinal bar 46, secured to the bearings of the cam-shaft 14. To prevent the cutters from moving the blank sidewise, I provide the lower roller 41 with a series of grooves, which engage strips upon the lower face of the pattern-plate and also roughen or serrate the upper roller 42, as shown in Fig. 3.

To automatically shift the belts 22, I provide a lever 47, having a swivel connection with a vertical lever 48, arranged to be engaged by a stop 49 upon the sliding frame. The lever 47 is connected to the belt-shifter 50, engaging the outer belt 22, and when the sliding frame reaches the end of its travel the stop 49, engaging the lever 48, shifts the belts and reverses the motion of the screw-shaft, causing the frame to return to its original position.

When the sliding frame approaches the limit of its motion to the left, the rollers 36 ride up the end inclines of the patterns to a plane portion 51 of the patterns, and stops 52 upon the outer portions of the sliding frame, engaging sliding plates 53, mounted upon the frame, force them through the U-shaped standards 35 and hold the rollers away from the pattern during the return movement of the frame. Near the end of this return movement, however, stops 54 upon the sliding frame strike the opposite ends of the sliding plates 53 and drive them back out of the U-shaped standards, thus allowing the rollers to again bear upon the plane portions of the patterns. To stop the return movement of the frame, I provide an inner stop 55, which engages the lever 48 and throws the outer belt 22 back onto the outer loose pulley, thus stopping the frame. To start the machine, I provide the hand-shifter 56, which moves the inner belt 22 upon the middle driving-pulley.

To bring the axis of the support 29 directly beneath the center of its swing with any width of blank, I employ adjustable bearings 57, which may be moved back and forth by the adjusting-screws 58 to bring it to the desired point and prevent cutting over or under a perpendicular line.

The operation is apparent. A clamping-bar being placed in position with the blank upon it, the lever 56 is shifted and the frame moves along, the rollers 36 moving down the end inclines of the patterns. As the frame moves the cutters operate upon the blank, and being guided by the rollers riding over the patterns give the desired shape to each side of the blank. The frame is then automatically returned to its original position, the rollers 36 lowered to the patterns, and the

blank and clamping-bar being removed another is inserted, and the operation repeated.

The advantages of my invention will be obvious to those skilled in the art, since numerous slow, costly, and dangerous operations are done away with and the work accomplished quickly, accurately, cheaply, and with perfect safety to the operator.

Various changes in the form and arrangement of the parts may be made by the skilled mechanic without departing from my invention, since

What I claim as new, and desire to secure by Letters Patent, is—

1. A woodworking-machine, comprising a non-rotatable frame carrying a blank and having a pattern thereon, a rotatory mandrel having a circular cutter, the axial line of the mandrel and cutter lying substantially in a plane passing through the center of the blank, a roller movable upon the pattern and connected to the cutter, and means for moving the cutter and the frame relatively to each other.

2. A woodworking-machine, comprising a non-rotatable frame, carrying a blank and having thereon oppositely-arranged patterns, rotary mandrels on opposite sides of the frame and having thereon circular cutters, the axial lines of the cutters lying substantially in a common plane which passes through the center of the blank, rollers movable upon the patterns and connected to the cutters, and means for moving the frame and cutters relatively to each other.

3. A woodworking-machine, comprising a non-rotatable frame carrying a blank and having oppositely-arranged patterns thereon, swinging standards having circular cutters thereon, said cutters being located oppositely to each other and having their axial lines lying substantially in a common plane which passes through the center of the blank, each cutting its edge of the blank independently of the other cutter, rollers movable upon the patterns and connected to the cutters, and means for moving the frame longitudinally past the cutters.

4. A woodworking-machine, comprising a non-rotatable frame arranged to carry a blank and having oppositely-arranged patterns thereon, a swinging standard having a rotatory mandrel carrying a circular cutter, the axial line of the cutter lying in a plane which passes through the center of the blank, a driven pulley having the same axis as the pivot of the swinging standard, a belt extending from the pulley to the shaft of the rotatory mandrel, and means for moving the frame longitudinally past the cutters.

5. A woodworking-machine, comprising a frame arranged to carry a blank and having oppositely-arranged patterns thereon, rotary cutters carried on shafts mounted in swinging standards, two driven shafts belted to the cutter-shafts, yokes connected to the standards and having rollers bearing upon the pat-

terns, and a shaft arranged to move the frame past the cutters, said shaft having belt connections arranged to drive the same from either of the driven shafts; substantially as described.

5 6. A woodworking-machine comprising a frame having a pattern thereon, a blank-carrying bar removably secured thereto, said bar having clamps for holding the blank in place, a rotary cutter arranged to operate upon the blank, a roller movable upon the pattern and connected to the cutter, and means for moving the cutter and frame relatively to each other; substantially as described.

15 7. A woodworking-machine, comprising a frame having a pattern thereon, a blank-carrying bar removably secured thereto, said bar having clamps for holding the blank in place, a yielding roller arranged to press upon the upper face of the blank, a rotary cutter arranged to operate upon the blank, a roller

movable upon the pattern and connected to the cutter, and means for moving the cutter and frame relatively to each other; substantially as described. 25

8. A woodworking-machine comprising a frame arranged to carry the blank and having a pattern thereon, a rotary cutter mounted upon a swinging standard and arranged to operate upon the blank, the cutter being so arranged that its axial line lies in a plane which passes through the center of the blank an adjustable bearing for said standard, and a roller bearing upon the pattern and having a support connected to the swinging standard, substantially as described. 30 35

In testimony whereof I have hereunto set my hand.

DAVID P. COOPER.

Witnesses:

JOHN E. McVEY,  
HENRY M. ROBINSON.