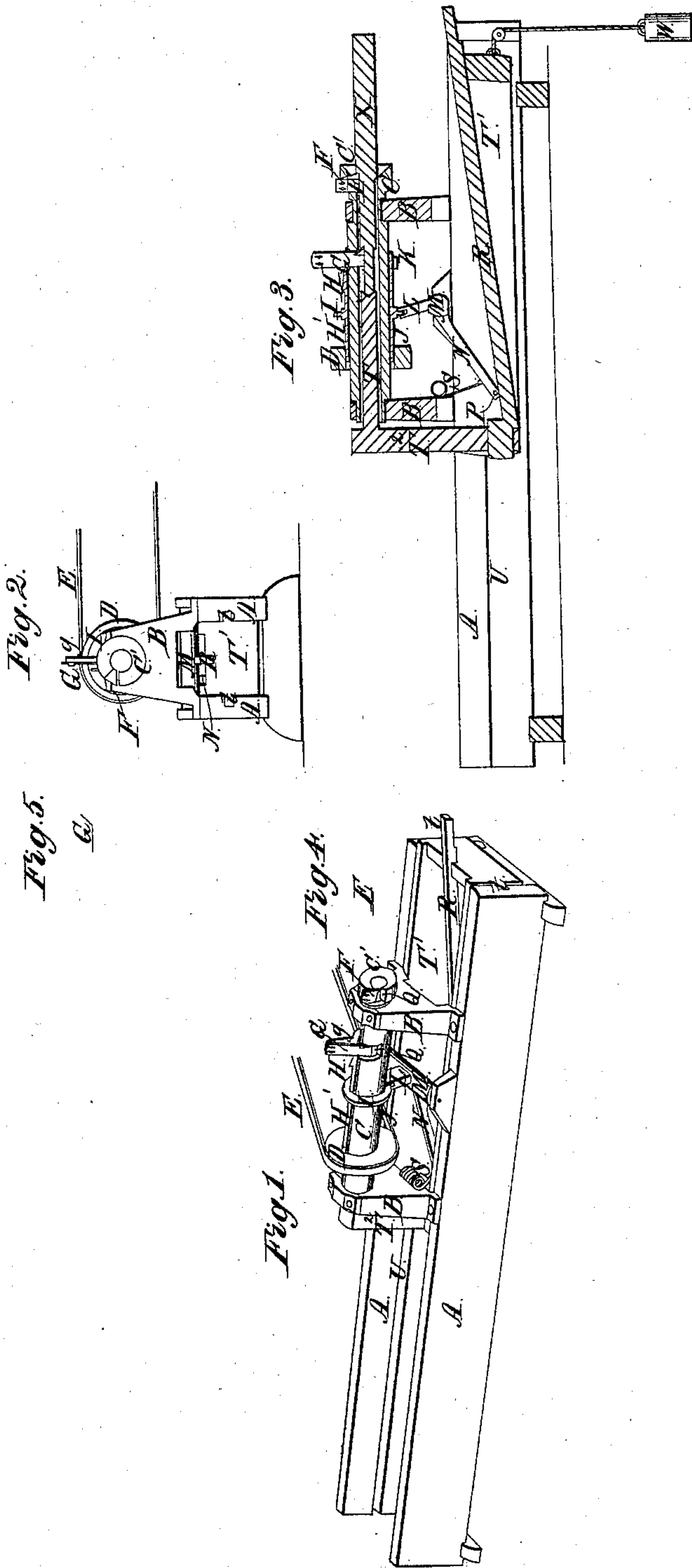


*W. Arery,  
Gage Lathe.*

*N<sup>o</sup> 3,618.*

*Patented June 5, 1844.*





# UNITED STATES PATENT OFFICE.

WYLLYS AVERY, OF SALISBURY, NEW YORK.

## TURNING WOOD TAPERING.

Specification of Letters Patent No. 3,618, dated June 5, 1844.

*To all whom it may concern:*

Be it known that I, WYLLYS AVERY, of Salisbury, in the county of Herkimer and State of New York, have invented a new and useful Method of Turning Timber Tapering by Passing it Through a Revolving Hollow Mandrel; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a perspective view of the machine. Fig. 2 is an end view. Fig. 3 is a longitudinal section. Fig. 4 is a section of the cutter or chisel at the mouth of the mandrel. Fig. 5 is a section of the movable chisel.

This machine consists of a suitable frame or bench A, upon which are fastened two pillars B B in which a hollow mandrel C turns by means of a pulley D on said mandrel around which is passed a strap E leading to the driving or propelling power.

F represents the chisel which cuts the sticks to the size of the bore of the mandrel or to a less size if necessary.

F in Fig. 4 represents an end view of said chisel.

G represents the chisel which is moved to vary the size of the stick or give it a taper from one end to the other end as the stick enters the mandrel. G in Fig. 5 is an end view of said chisel. On the edge it should be nearly or quite flat for a short distance in the middle. This chisel is made fast at the outer end by screws to an arm g on the mandrel for that purpose and made elastic or springy so as to yield or be raised by sliding the wedge H under it close to the mandrel.

I is a sliding ring made to slide freely back and forth over the mandrel, the plane of the ring or vertical circular plate being kept at right angles with the axis of the mandrel by the rods H, J, which are made fast to the flange or circular plate and slide through the pulley to the left and right, the upper one H' being shaped like a wedge and when moved to the right acts as a wedge to raise the chisel G, the lower rod J being kept steady by passing through a knob K attached to the mandrel for that purpose. The aforesaid circular plate, ring or flange I is made of metal and turned perfectly smooth, the outer edge of which plate runs

in a groove in the end of the arm L which is inserted into the rock shaft M. Another arm M is fitted into the same rock shaft M having a pin P in its lower end which lays on the top of the inclined sliding gage rod P being held down thereon by a spring S or weight attached to the carriage.

The cutter F at the open or dish shaped end of the mandrel is made in the usual manner and secured to the mandrel by screws passed through oblong slots in the shank of the cutter into the mandrel.

The movable cutter G is attached to an arm g (projected from the circumference of the mandrel) by screws inserted into said arm near its outer extremity the said cutter being adjustable on the shanks of said screws by means of oblong slots in the cutter through which the screws pass. Both cutters are placed in openings Q Q in the circumference of the revolving mandrel through which openings the chips pass.

A cylindrical guide T (forming part of the carriage T') is placed in the mandrel having a longitudinal movement back and forth, within the mandrel for supporting and guiding one end of the stick of timber to be cut and shaped tapering, said portion of the carriage being made concave at the end next the cutter, into which concave end, one end of the stick of timber to be shaped is inserted, the other end of this portion of the carriage is inserted into an upright piece T<sup>2</sup> of the carriage forming its rear end.

The sides of the aforesaid carriage consists of two horizontal parallel rails A framed together having tongues t on the sides thereof which slide horizontally back and forth in corresponding grooves v made in the inner sides of the parallel rails of the bench or frame.

A gage rod R for determining the taper to be given to the piece of timber inserted into the mandrel is arranged and secured longitudinally in the carriage at any required angle with a horizontal plane variable at pleasure and movable with the carriage for gradually moving the cutters farther from the center of the stick of timber being tapered as it enters the mandrel—thus producing the taper required—said gage rod as it moves toward the rear end of the bench, causing the arm N to rise in the arc of a circle and the arm L at the same time to move toward the cutter carrying with the said arm the circular plate I and



wedge H attached thereto which is carried simultaneously between the arm *g* and cutter G causing the cutting edge of the latter to gradually extend itself from the center of the mandrel and thus increase the diameters of the circles in which it performs its work.

5 the mandrel and thus increase the diameters of the circles in which it performs its work.  
A weight W for drawing back the carriage T is suspended to the end of a cord attached to the end of the carriage and  
10 passed over a pulley let into the bench or frame.

If a piece of timber such as *x* of proper size is introduced into the mandrel C' the chisel F will cut it to a diameter as much  
15 less than the diameter of the bore of the mandrel as the cutting edge extends into the mandrel; and when the stick arrives at the movable cutter G its diameter will be still further reduced according to the position  
20 of said movable cutter. When the stick reaches the round part T of the carriage in the mandrel the whole carriage with the inclined gage rod thereon is caused to recede and the stick of timber continuing to enter  
25 the mandrel and the carriage to recede the inclined gage R acts on the pin P resting

upon it, causing the end of the arm N to rise and the shaft M to turn which acts upon the other arm L and this upon the ring I and the ring I upon the wedge H which  
30 passes between the spring cutter G and the arm *g* to which it is attached, by which the position of the cutting edge of the chisel G is changed and consequently the form of the piece of timber to be shaped in contact  
35 therewith.

What I claim as my invention and which I desire to secure by Letters Patent, is—

The mode of moving the second cutter G, causing it to recede from the center of the  
40 hollow mandrel, to cut pieces of wood tapering, by the combination of the wedge H—plate I arms L and rock shaft M—carriage T, and gage rod R arranged and operated in the manner and for the purpose set forth,  
45 or in any other mode substantially the same, by which analogous results are produced.

WYLLYS AVERY.

Witnesses:

E. W. SMITH,  
BENJAMIN D. BRACKETT.