(No Model.) 3 Sheets—Sheet 1.

D. ADAMS.

WOOD TURNING LATHE.

No. 569,946. Patented Oct. 20, 1896.

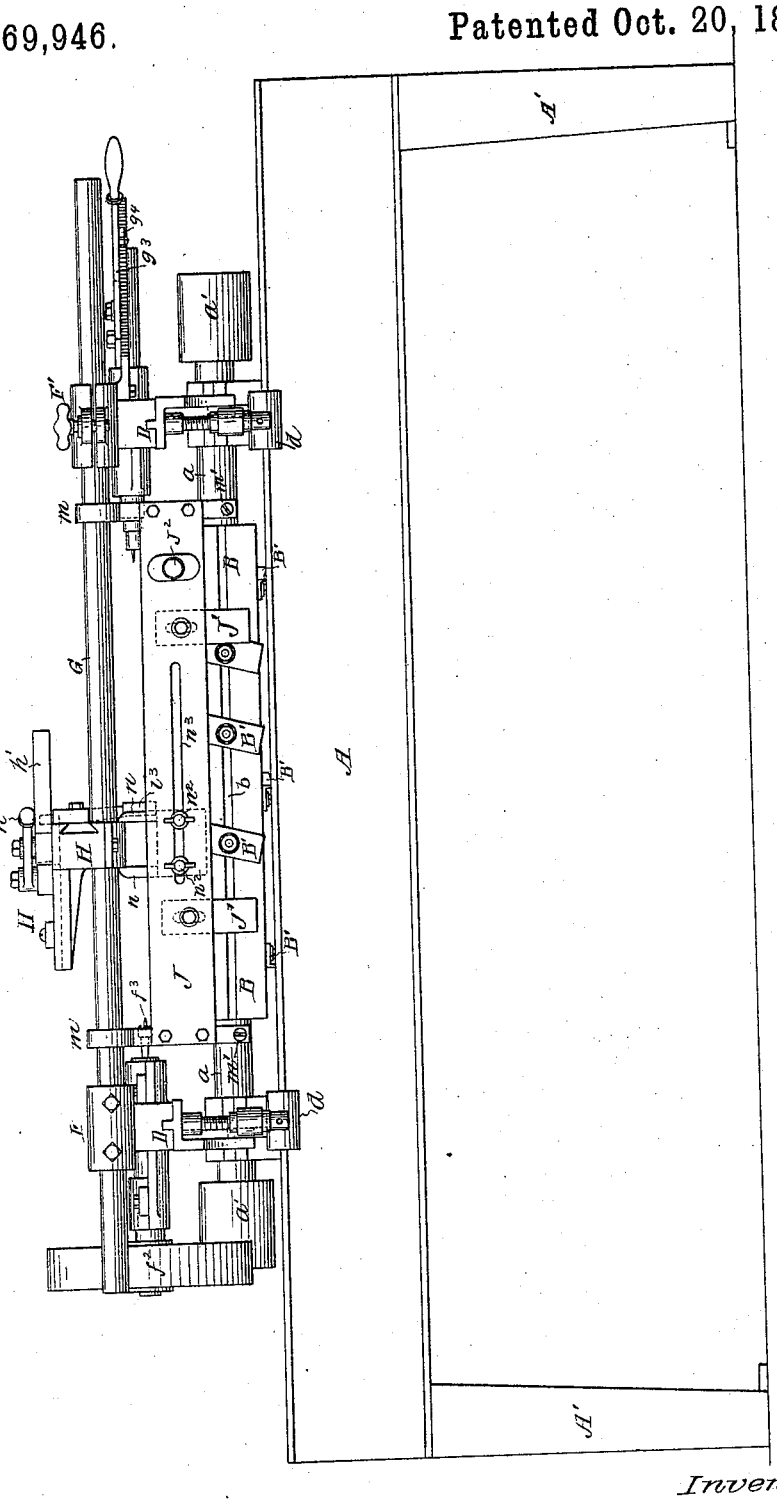

FIG. 1.

Witnesses:
R. Schleicher.
Wm. A. Barr.

Inventor:
Daniel Adams
by his Attorneys
Howson & Howson

(No Model.)

3 Sheets—Sheet 2.

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WOOD TURNING LATHE.

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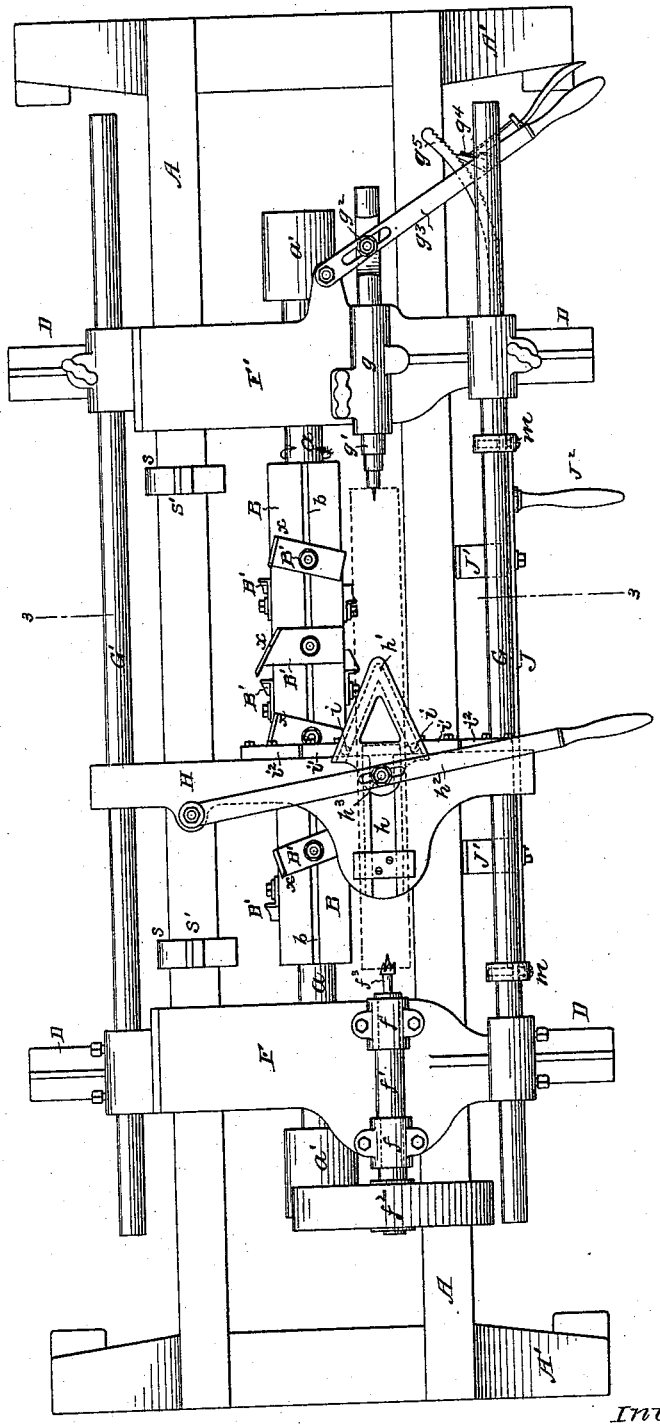

FIG. 2.

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(No Model.) 3 Sheets—Sheet 3.

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WOOD TURNING LATHE.

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FIG. 3.

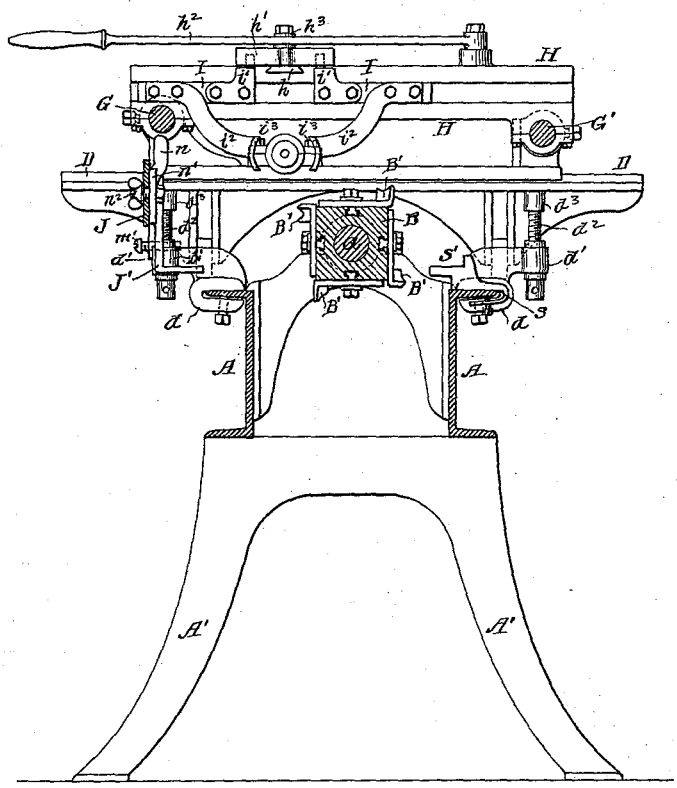


FIG. 4.

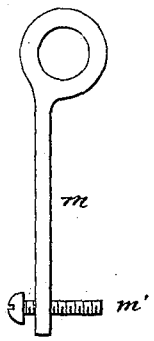
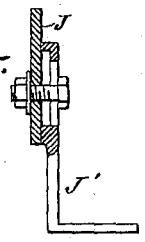


FIG. 5.



Witnesses:
R. Schlicher
Will. A. Barr.

Inventor:
Daniel Adams
by his Attorneys
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UNITED STATES PATENT OFFICE.

DANIEL ADAMS, OF PHILADELPHIA, PENNSYLVANIA.

WOOD-TURNING LATHE.

SPECIFICATION forming part of Letters Patent No. 569,946, dated October 20, 1896.

Application filed May 9, 1895. Serial No. 548,668. (No model.)

To all whom it may concern:

Be it known that I, DANIEL ADAMS, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Wood-Turning Lathes, of which the following is a specification.

My invention consists of certain improvements in lathes, such as are employed for turning balusters, table-legs, and the like.

The improved lathe comprises a rotary cutter-drum with cutters of the proper shape affixed thereto, and cross-heads, one carrying a driving-spindle and the other a center spindle, between which the work is held, these cross-heads being movable laterally, so that the rapidly-rotating block of wood can be carried back and forth over the rapidly-rotating cutter. The cutter-drum is provided with cutters so constructed or mounted upon the drum that their cutting edges will be inclined in respect to the axial line of the drum and also of the block of wood which is being turned, so as to act upon the latter with a shear cut, and the lathe is provided with means for supporting the block of wood at a point between its ends, so as to prevent buckling of the same during the turning operation. Ready means are employed for adjusting the block or strip to proper position between the driving-spindle and the supporting-spindle before commencing to turn the same, and both cross-heads are adjustable, so as to readily adapt the lathe for turning blocks of different lengths.

In the accompanying drawings, Figure 1 is a front view of a turning-lathe constructed in accordance with my invention. Fig. 2 is a plan view of the same. Fig. 3 is a transverse section on the line 3 3, Fig. 2; and Figs. 4 and 5 are transverse sections, on a larger scale, of parts of the lathe.

The frame of the lathe consists of a pair of longitudinal girders A, suitably supported upon legs A′, and carrying the bearings for the shaft a of the cutter-drum B, said shaft being provided at either or both ends with a pulley a' for the reception of a belt whereby the shaft may be driven at high speed.

The cutter-drum B is of the usual rectangular form in cross-section and has in each side an undercut groove b for the reception of the heads of the bolts whereby the cutter-blades B′ are secured to the sides of the drum. The cutting edges of these blades are shaped, as usual, so as to impart the proper contour to that portion of the block upon which they act, but the cutting edge of each blade is at an angle in respect to the axial line of the drum, as shown, for instance, in Fig. 2, this angular disposition of the cutting edge being effected either by an angular disposition of the blade itself upon the drum or by disposing the cutting portion of the blade at an angle in respect to the securing stem or shank of the same, the latter being disposed upon the drum at right angles to the axis. Both of these plans are shown in Fig. 2. By this means, supposing that the drum is rotating in the direction of the arrow, Fig. 2, the portion x of the blade commences the cut, so that the blade is brought into action gradually and reduces the wood by a shear cut. Hence there is less strain upon the cutters and less tendency to tear the wood than when the cutting-faces of the blades are at right angles to the axial line of the drum.

To the girders A of the lathe-frame are secured two pairs of clamps d, each clamp having a projecting arm d', provided at the outer end with an opening to which is adapted the stem of a set-screw d^2, vertically confined to the arm by means of collars above and below the same, but free to turn in the arm, the upper end of the set-screw being adapted to a threaded projection d^3 on the under side of a transverse rail D, one of these rails being carried by the set-screw of each pair of clamps.

Upon the transverse rails D are mounted two cross-heads F F′, the cross-head F having bearings f for the driving-spindle f', which has a pulley f^2 for receiving the driving-belt and is also provided with a spurred or barbed driving-pin f^3 for engaging with one end of the block which is to be turned, said block being shown by dotted lines in Fig. 2. The cross-head F′ has a bearing g for the reception of a sliding spindle g', which has at the inner end a center point for engaging with the opposite end of the block to be turned, a pin g^2 on said spindle engaging with a slotted lever g^3, whereby the spindle can be moved backward and forward, the lever being retained in its forward position by a pawl g^4, engaging with a segmental rack g^5.

By shifting the clamp d longitudinally upon the girders A of the lathe-frame the cross-heads F F′ can be caused to approach or recede from each other, so as to adapt the lathe for turning long or short blocks, it being understood that the drum B is as long as the longest block to be turned, and the cutters B′ are disposed upon the drum so as to turn any desired portion of the block carried by the spindles f' g', whether said block may be long or short.

The cross-heads F F′ are provided at front and rear with longitudinal rods G G′, and upon these rods is mounted so as to be capable of moving longitudinally a cross-head H, slotted longitudinally for the reception of the slide h, which carries at the inner end a V-shaped cam h', the slide and its cam being capable of being moved backward and forward by means of a slotted lever h^2, which engages with a bolt h^3, projecting upward from the slide.

Each of the grooves of the V-shaped cam h' is adapted for the reception of a pin i, projecting upwardly from a bracket i', secured to a slide I, which is adapted to a transverse groove in the face of the cross-head H, and each of the slides i carries a downwardly-bent arm i^2, terminating in a segmental jaw i^3, as shown in Fig. 3, these jaws being so far above the cutter-drum B as to be out of the path of the cutting-blades of said drum. When the rectangular block which is to be turned is first placed in position between the opposite spindles, the jaws i^3 are retracted to their full extent, so as to be free from engagement with the block, but the slide H has previously been longitudinally adjusted to such a position that the jaws correspond with a portion of the block which is to be reduced to circular form by the rotary cutters, and as soon as the block has assumed a circular form the lever h^2 is moved so as to draw the slides I together and cause the jaws i^3 to bear upon such circular portion of the block and thus provide a support for the same at a point between its opposite ends and prevent the buckling or springing of the block which might take place in the absence of such additional support.

As that portion of the block upon which the jaws i^3 act is further reduced in diameter by the action of the cutters the jaws i^3 are caused to approach each other by pressing upon the lever h^2, so that said jaws follow up the reduction in the diameter of the block and provide a constant bearing for the same.

Hung upon the front rod G by means of hangers m is a plate J, and secured to the inner side of this plate are L-shaped bars J′, adapted for the reception of the block which is to be turned. These L-shaped bars J′ bear such relation to the axial lines of the driving-spindle f' and center spindle g' that when the plate J is swung inward and upward by means of its projecting handle J^2 until set-screws m', carried by the lower portions of the hanger m, come into contact with the pin f^3 and spindle g' the block supported on the bars J will be brought into position for being clamped between the driving-spindle and center spindle, whereby the proper adjustment of the block in the lathe is materially facilitated and the exact centering of the same is insured, the plate J being dropped back to its normal position as soon as the block has been properly adjusted.

In order to retain the cross-head H in its proper longitudinal position after adjustment, said cross-head is engaged by a pair of jaws n on the plate n', which has a pair of bolts n^2, adapted to a longitudinal slot n^3 in the plate J, so that the jaws can slide upon the plate to accord with the adjustment of the cross-head H, and can then be secured in position by tightening suitable thumb-nuts carried by the bolts n^2.

In the operation of the machine the spindle a of the knife-drum is rapidly rotated and rotation in the opposite direction is imparted to the driving-spindle f' while the cross-heads F F′ are at the limit of their movement. The block being placed and secured in position the cross-heads are pushed rearwardly, so as to gradually bring the block under the action of the knives, and at the same time lateral pressure is imparted to the lever h^2, so as to cause the central bearing-jaws i^3 to bear upon the block, the rearward movement of the cross-heads F F′ being continued until the axis of the block is directly above that of the knife-drum, by which time the knives of the latter are in full action upon the block and the desired contour is imparted to the same. The cross-heads are then brought forward, the turned block discharged, and another block is placed on the lugs J′ and adjusted to and held by the spindles f' g' prior to a repetition of the operation.

In order to facilitate the adjustment of the cutters upon the drum B, I provide the rear girder of the lathe-frame with clamps s, carrying gage-blocks s', on which can be deposited the pattern of the baluster, table-leg, or the like to be produced, said pattern being thus so supported that when the cutters are fitted to the turned portions of the same they will be in proper position to be clamped to the drum B.

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

1. The combination in a wood-turning lathe, of the rotary cutter, cross-heads having spindles for engaging, supporting and rotating the block to be turned, a swinging frame depending from one of the guide-rods of the machine, and angle-bars mounted on said frame and serving to support the block to be turned, said angle-bars being so located on the swinging frame that when the latter is moved inward and upward the block carried by the bars will be brought into position between the lathe-spindles, substantially as specified.

2. The combination in a wood-turning

lathe, of the rotary cutter, cross-heads having spindles for engaging, supporting and rotating the block to be turned, a swinging frame depending from one of the guide-rods of the machine, angle-bars mounted on said swinging frame and adjustable thereon from and toward the axis around which it swings, said swinging frame being adapted to move inward and upward, whereby the block carried by the angle-bars of the frame is brought into position between the lathe-spindles, substantially as specified.

3. The combination in a wood-turning lathe, of the rotary cutter, cross-heads having spindles for engaging, supporting and rotating the block to be turned, the swinging frame depending from one of the longitudinal guide-rods of the machine and adapted to move inward and upward, bars carried by said swinging frame and adapted to support the block to be turned and to adjust the same to a position between the lathe-spindles, an intermediate cross-head located above the lathe-spindles and having transverse slides carrying jaws for engaging the block at a point between the ends of the same, a longitudinal slide having cams engaging projections on said transverse slides, and a lever for operating said longitudinal slide, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DANIEL ADAMS.

Witnesses:
WILL A. BARR,
JOS. H. KLEIN.