(No Model.)

2 Sheets—Sheet 1.

J. BANWELL.

UNIVERSAL ROD AND RING MACHINE.

No. 526,673. Patented Oct. 2, 1894.

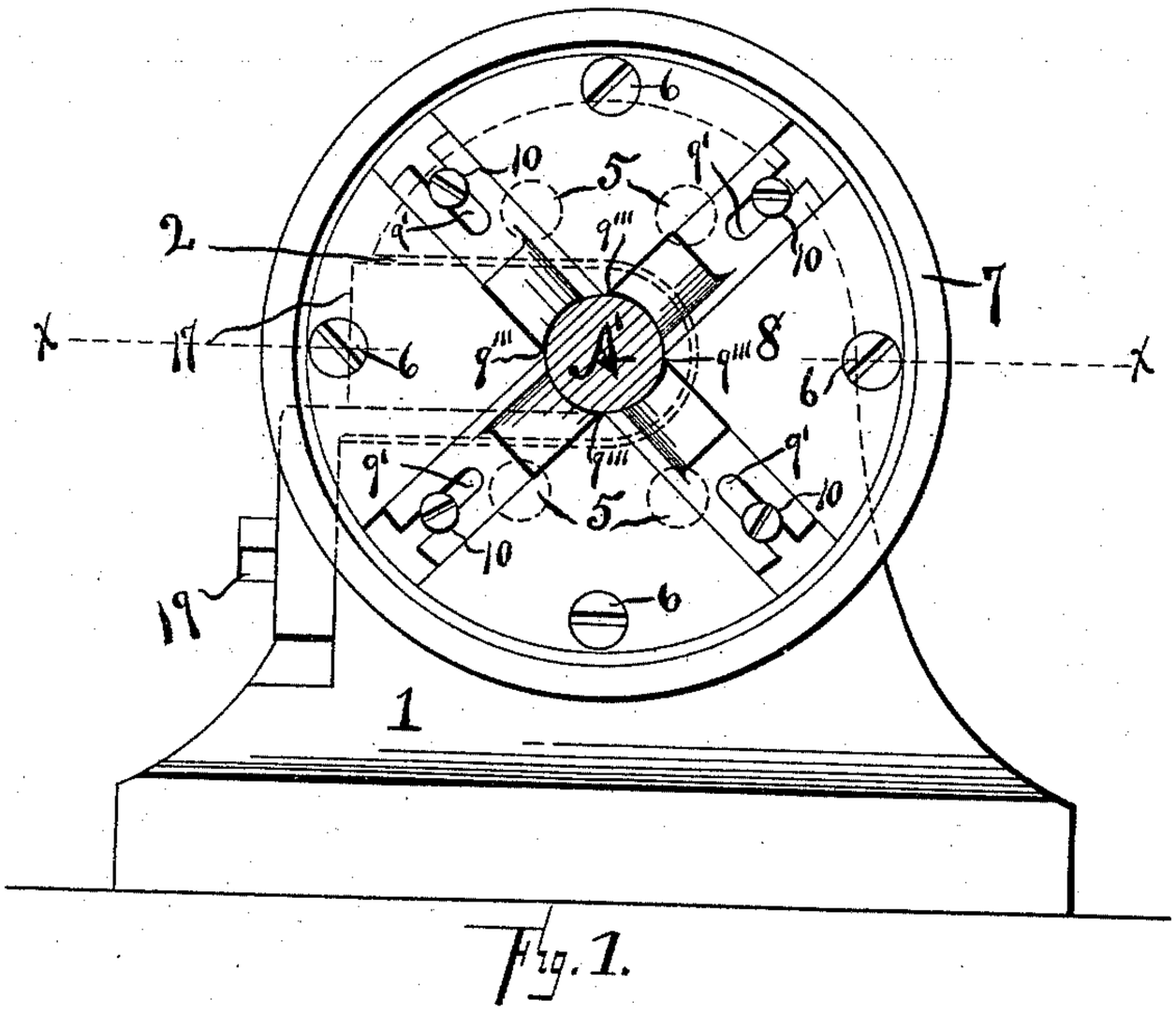

Fig. 1.

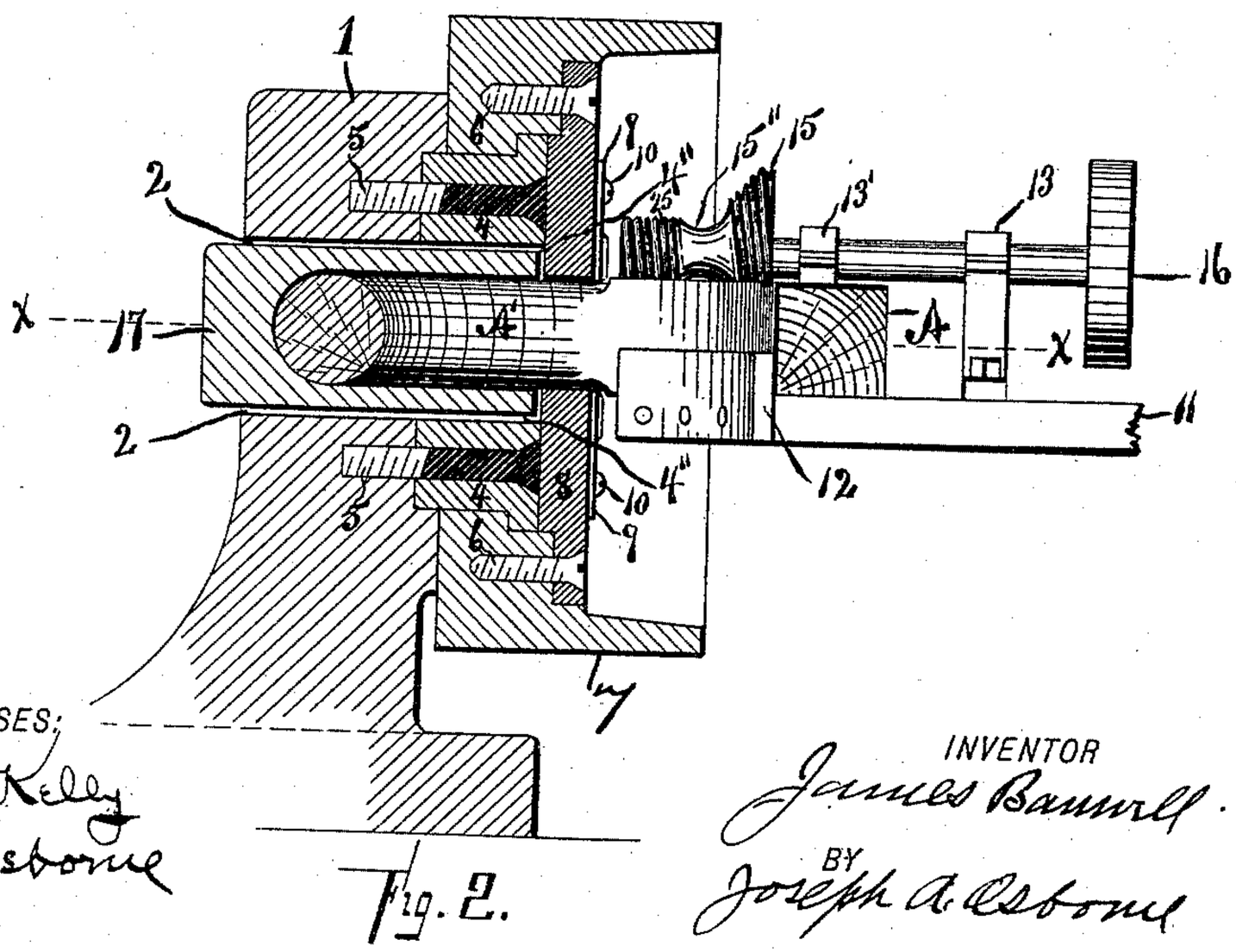

Fig. 2.

INVENTOR
James Banwell.
BY
Joseph A. Osborne
ATTORNEY.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

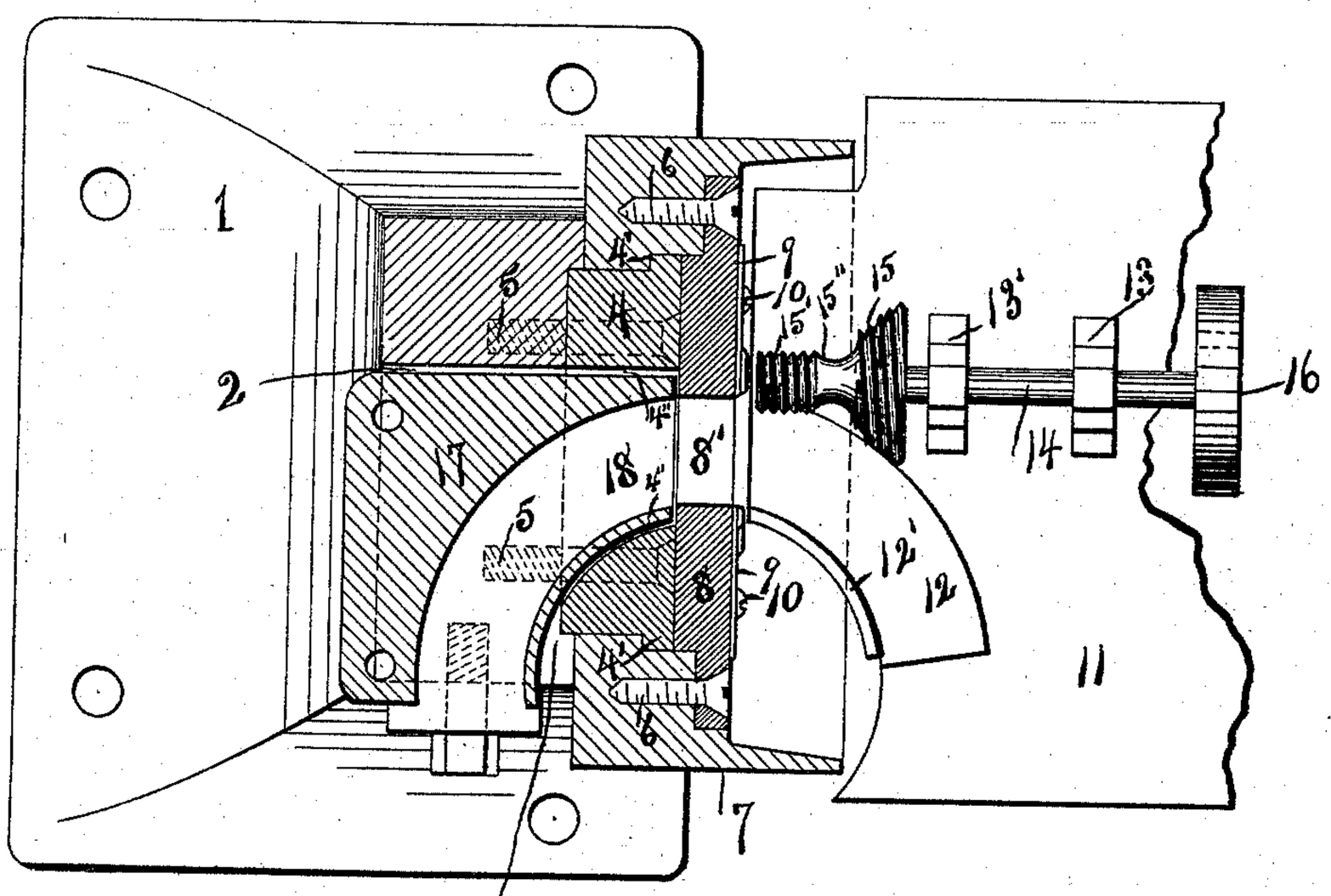


Fig. 4.

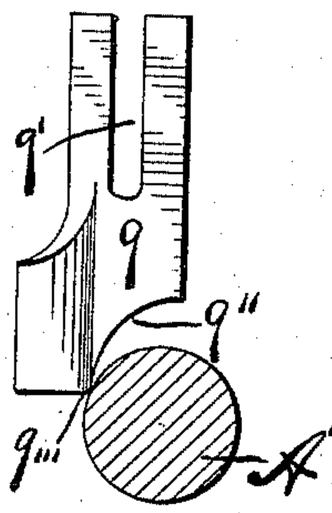


Fig. 6.

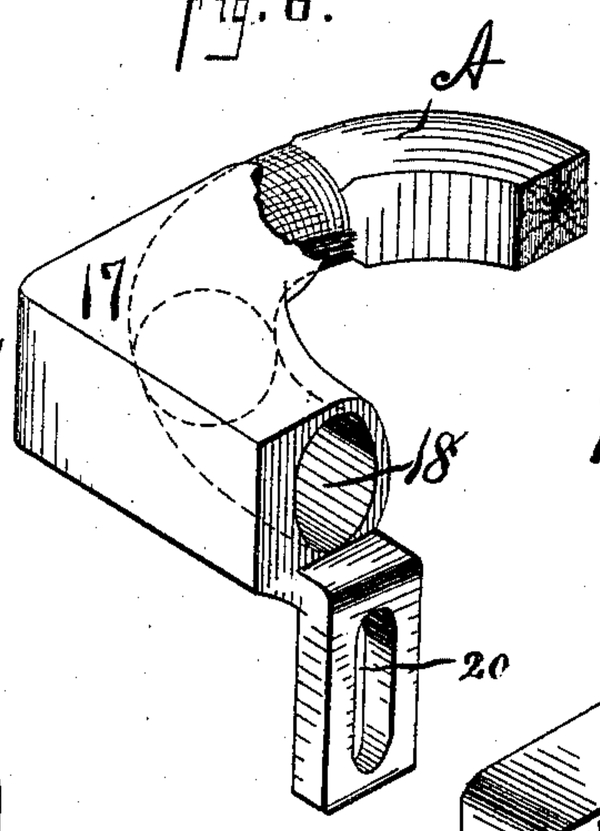


Fig. 5.

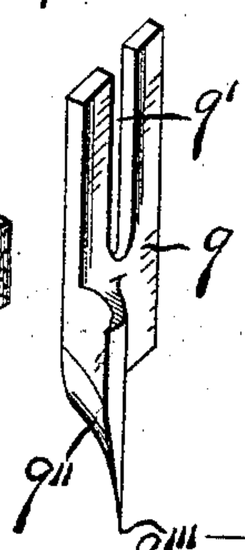


Fig. 8.

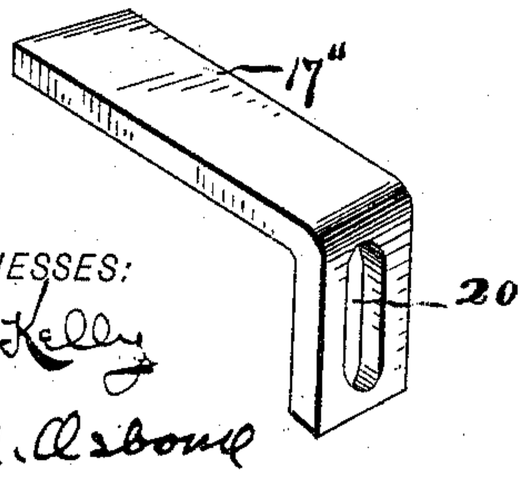
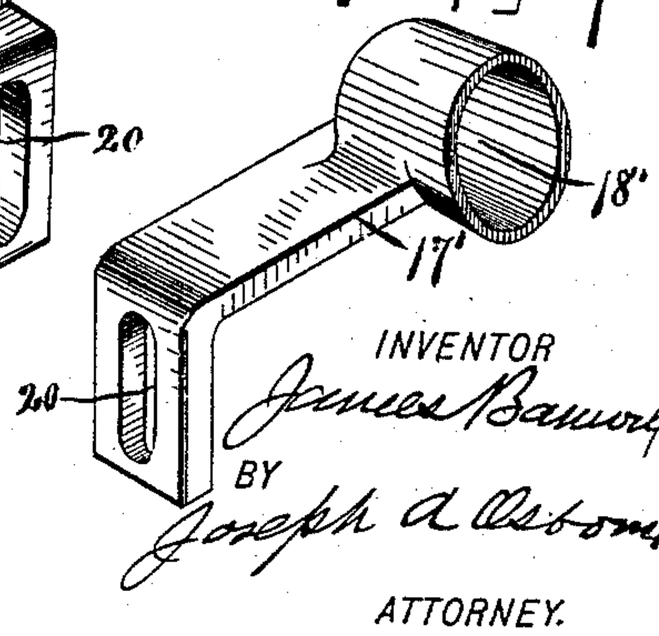


Fig. 7.



WITNESSES:
S. J. Kelly
Leon M. Asbourne

INVENTOR
James Banwell
BY
Joseph A Asbourne
ATTORNEY.

UNITED STATES PATENT OFFICE.

JAMES BANWELL, OF CLEVELAND, OHIO, ASSIGNOR TO THE CLEVELAND WOOD TURNING COMPANY, OF SAME PLACE.

UNIVERSAL ROD AND RING MACHINE.

SPECIFICATION forming part of Letters Patent No. 526,673, dated October 2, 1894.

Application filed December 7, 1892. Serial No. 454,402. (No model.)

To all whom it may concern:

Be it known that I, JAMES BANWELL, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Universal Rod and Ring Machines, of which the following, with the accompanying drawings, is a specification.

My invention relates generally to machines for turning wood; and is especially designed to turn semi-circular wooden handles for sad-irons, and to making wooden rings.

The object of my invention is a machine which may be adapted to turn straight dowels; or to turn a semi-circular piece of wood that is square in cross-section round in cross-section, and be adapted to turn semi-circular pieces of wood of various radii, and of various thicknesses.

My invention consists in the construction, combination and arrangement of parts substantially as shown and described herein and defined in the claims.

In the accompanying drawings, which form a part of this specification, Figure 1 is a front elevation, the feed being removed. Fig. 2 is a central vertical section of my machine. Fig. 3 is a sectional plan on the lines $x\ x$ of Figs. 1 and 2. Fig. 4 is a side elevation of one of the knives or cutters, and shows the relative position of the knives or cutters and the stock upon which they operate. Fig. 5 is a perspective of the cutter. Fig. 6 is a perspective view of the discharge channel piece used in turning said-iron handles, with a partially turned semi-circular piece of wood entering the channel. Fig. 7 is a perspective of the discharge channel piece used when turning dowels or other straight work, and Fig. 8 is a perspective of a bracket which takes the place of the discharge channel pieces illustrated by Figs. 6 and 7 when turning other forms than straight and semi-circular pieces.

As my machine is designed especially to turn semi-circular wooden handles for sad-irons, the channel guides used in turning such handles are illustrated in Figs. 1, 2 and 3.

In making semi-circular sad-iron handles, semi-circular pieces of wood, square in cross-section, are first prepared by any suitable machinery, and are then turned by my within described machine as hereinafter stated.

In the drawings, reference figure 1 is a machine frame, which stands upon a suitable table, and supports the operative mechanism of the machine. Through this frame, from front to back, is an opening 2, which extends laterally to one side of the machine, as seen in Fig. 3, and as seen by the dotted lines in Fig. 1. Upon the front of the frame 1 is secured a detachable stationary bearing 4, which is held firmly to the frame 1 by means of strong screws 5. To give greater strength and rigidity to the machine, the bearing is partially sunk into the front of the frame 1 as illustrated. An annular flange 4′ is formed upon the front of the bearing 4 for the purpose of holding the cutter-head, as hereinafter described. There is an opening 4″ through the bearing 4.

Upon the bearing 4 the cutter-head is mounted and adapted to turn. The cutter-head consists of the wheel 7, its periphery being adapted to have a belt travel over it to drive the machine, and the circular face plate 8 removably secured to the face of the pulley 7. The wheel 7 is held upon the bearing 4 by means of the annular flange 4′ which fits into a recess formed in the face of the wheel 7, as illustrated in Figs. 2 and 3. The face plate 8 is secured to the wheel 7 by means of the screws, and rotates with it. To give greater strength, the face plate 8 is countersunk into the face of the revolving wheel 7. Said face plate 8 has a circular axial opening 8′ through it, through which passes the stock operated upon.

Cutters or knives 9, of substantially the form illustrated by Figs. 4 and 5, are adjustably secured to the face plate 8 by means of screws 10. The screws 10 pass through slots 9′ in the knives 9, which allow adjustment of the knives to and from the center of the machine. The cutting edges of said knives are formed like the cutting edges of cutters heretofore in use in dowel machines. The cutters have circular cutting edges 9″, set diagonally to their axes, and in such position that the cut will begin at the point 9‴.

11 is an elevated table having vertical and

lateral adjustment by any well known means. As the table 11 may be adjusted by so many practical means that will suggest themselves to mechanics, no means of adjustment is illustrated. The table should be so adjusted that stock fed over it will pass between the cutters 9.

To the side of the elevated table 11 is fixed a plate 12 having an upturned flange 12′ forming the arc of a circle which serves as an angular guide for the square portion of the stock fed into the machine. This flange 12′ is designed to engage one edge of the stock fed through the machine, and to form a guide for the stock A in front of the cutter head.

Upon the elevated table 11 are brackets 13—13′, which support the shaft 14 carrying the screw-feed 15—15′. The feed is driven by a belt over the pulley 16. The screw feed consists of the part 15, which bears against the outside of the stock A, and the part 15′, which bears upon the top of the stock A. Between the parts 15—15′ of the feed is a groove 15″ to accommodate the feed to the upper outer angle of the part of the stock A not operated upon. The parts 15—15′ of the feed are threaded like a screw to bite into the stock A and force it through between the cutters 9.

In making semi-circular sad-iron handles, I use a stock support 17, having formed therethrough a curved discharge channel 18 that is round in cross-section and formed in the arc of a circle of the same radius as the handles to be turned. This stock support extends into the opening 4″ of the bearing 4, so that the curved channel 18 of the stock support 17 forms a curved circular channel through the circular bearing 4, that is, the channel 18 would extend from the center of the front side of the bearing 4 back through said bearing, curving to one side. The discharge opening 18 coincides with the axial opening 8′ of the face plate 8 of the cutter head. The stock support 17 is held in place by the bolt 19 which passes through the slot 20. By means of the bolt 19 and the slot 20 the stock support 17 is adjustable vertically. The curved discharge channel 18, the axial opening 8′, and the angular guide 12′ together make a curved channel way through the machine. The axial opening 8′ through the face plate 8 and the curved discharge channel 18 should fit closely enough upon the turned portion of the handle A′ to prevent vibration of the same, while the feed 15—15′ and the guide flange 12′ of the plate 12 hold the outer square end of the stock A firmly.

As the face plate 8 and the stock support 17 are removable, semi-circular sad-iron handles of various radii and of various thicknesses may be made on the machine by having other interchangeable face-plates with adjusted knives, and stock supports having openings of various sizes in cross-section, and of different radii in the stock support, and by adjusting the feed 15—15′ to the size of stock to be operated upon. To adjust the feed, blocks of various thicknesses may be put under the outer bracket 13, thus raising or lowering the outer end of the shaft 14, the bracket 13′ forming a pivot for the feed-shaft 14, thus raising or lowering the feed 15—15′. The plate 12 may be adjusted by employing backing sheets, or by elevating the table 11, as hereinbefore stated.

By substituting a stock support 17′ of the form illustrated by Fig. 7, for the one 17, shown in Figs. 1, 2, 3 and 6, straight rods may be turned. The size of the opening 18′ will depend upon the size of the rod turned, as when turning sad-iron handles.

By using a stock support 17″, of the form illustrated by Fig. 8 other turning may be done upon the machine.

The stock supports 17′ and 17″ have the same slot 20 as that seen in 17, and are secured to the machine in the same manner.

Rings are made by forming two semi-circular pieces and then uniting them with glue.

The parts of the machine are assembled by placing the bearing 4 within the wheel 7, then putting in the screws 5. The face-plate 8, with the cutters 9, is then secured to the wheel 7 by the screws 6.

The operation of the machine will be understood from the drawings and the description given. The cutter-head with its attached adjustable cutters is driven at a high speed by a belt that travels over the cutter-head, and the feed is driven by a belt that passes over the pulley 16. The prepared stock A is placed upon the plate 12 and is forced between the cutters 9 by the feed 15—15′ as illustrated, and passes out through the discharge channel 18.

My invention may take on various changes of mechanical construction without departing from the spirit of my invention. For instance, if it is desired to use the machine for turning sad-iron handles of one size, the frame 1, bearing 4, and the stock support 17 may be one piece, forming a support for the cutter-head, with a curved opening through of the form of the channel 18 through which the stock will pass, which opening will coincide with the axial opening in the cutter-head. In this case, any other suitable means than that shown may be adopted for keeping the cutter-head in place upon the bearing 4, or the bearing may be made separate and the cutter-head secured thereto as shown, and have a channel through the bearing starting at the center of the bearing and radiating to one side; but as the capacity of the machine is very great, it is preferable to make the parts adjustable.

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

1. A circular bearing having an opening through it; an adjustable stock support to enter the opening through the circular bearing; a cutter-head having an axial opening and being adapted to rotate upon the circu-

lar bearing, and having driving connection; suitable cutters secured to the cutter-head, and a screw-feed consisting of the threaded parts 15 and 15′ and the groove 15″, substantially as illustrated and described.

2. A circular bearing having an opening through it, an adjustable stock support adapted to enter the opening of the circular bearing, a cutter-head adapted to rotate upon said circular bearing, said cutter-head having an axial opening and being provided with driving connection, cutters adjustably secured to the cutter-head, and a screw feed consisting of the threaded parts 15 and 15′ and having the groove 15″, substantially as illustrated and described.

3. A circular bearing having an opening through it, an adjustable stock support to enter the opening through the circular bearing, a cutter-head adapted to rotate upon the circular bearing, the cutter-head having an axial opening and having suitable cutters secured thereto, and being provided with driving connection, and an adjustable screw feed, substantially as illustrated and described.

4. The combination of a machine frame, a detachable stationary bearing having an opening through it and having an annular flange, and a cutter head consisting of a wheel (which wheel is held upon the circular bearing by means of the annular flange) and a face plate provided with an axial opening secured to said wheel, substantially as illustrated and described.

5. A circular bearing having a curved opening through it, a revolving cutter-head adapted to turn upon said circular bearing and having an axial opening and being provided with driving connection, an angular guide at the front of the cutter-head, and a feed consisting of the threaded parts 15 and 15′ and the groove 15″, substantially as illustrated and described.

In testimony whereof I affix my signature, in the presence of two witnesses, this 2d day of December, 1892.

JAMES BANWELL.

Witnesses:
W. O. MELVIN,
D. M. OSBORNE.