

THOMAS SULLIVAN.
Improvement in Lathes.

3 Sheets--Sheet 1.

No. 123,058.

Patented Jan. 23, 1872.

Fig. 1.

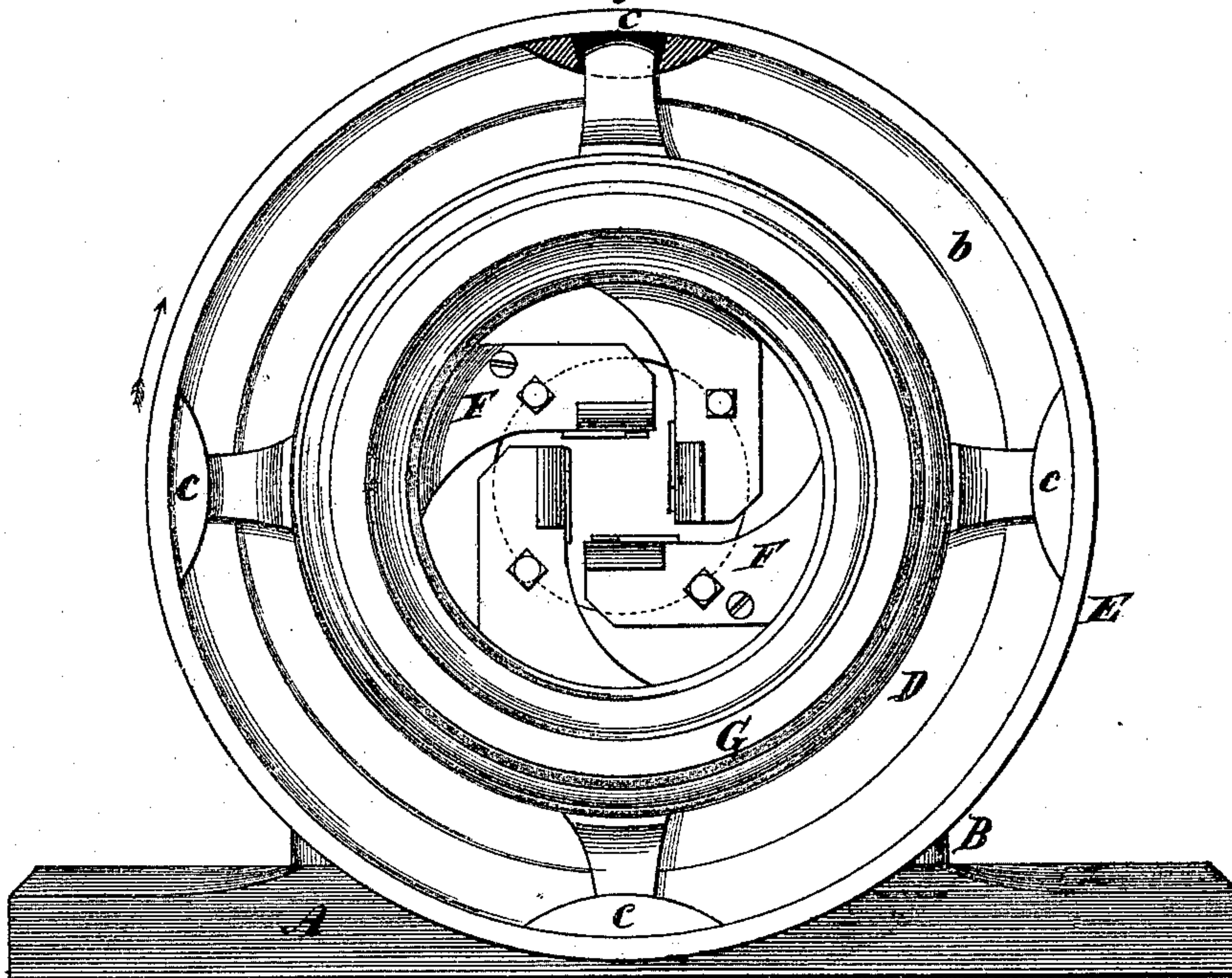
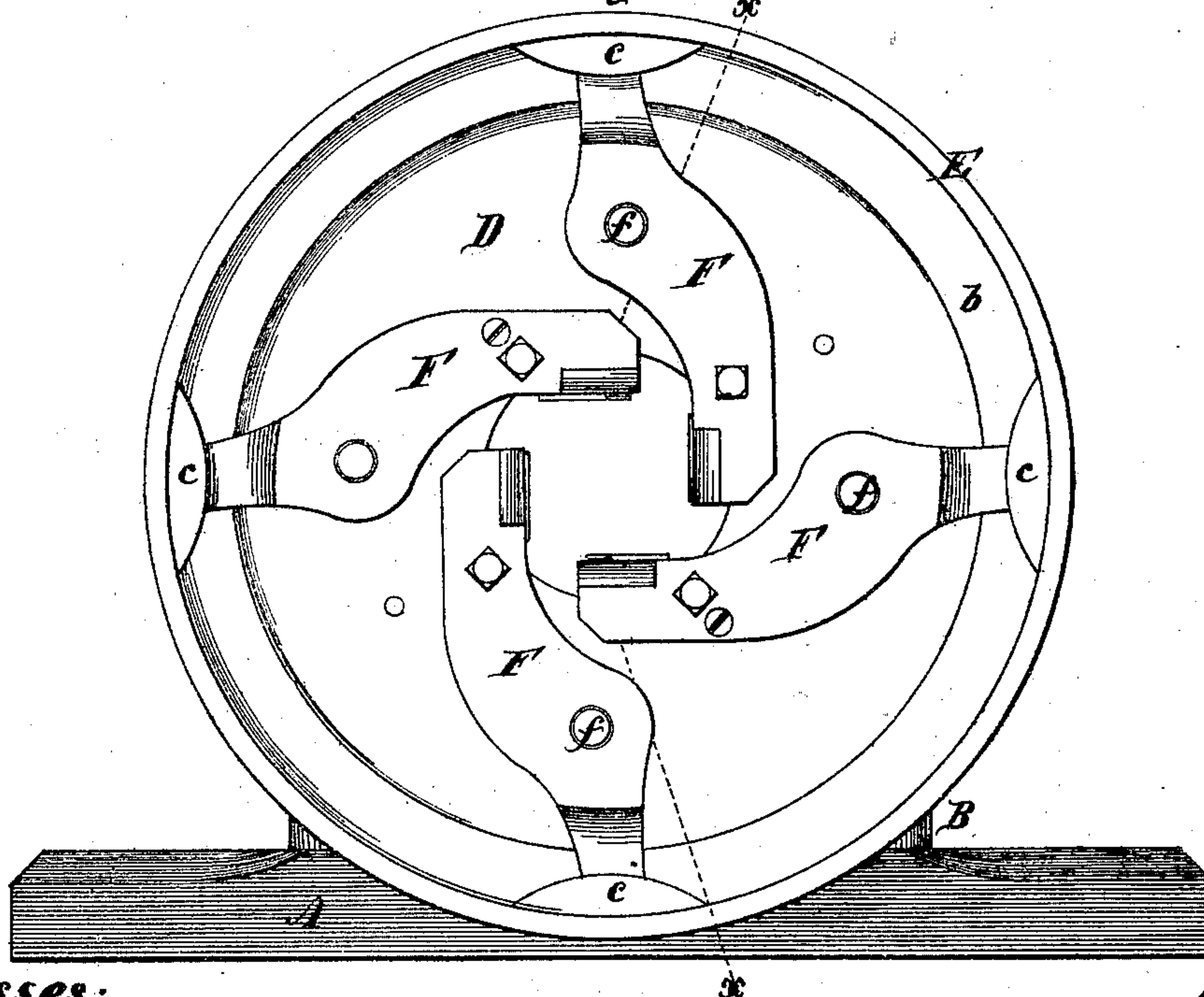


Fig. 2.



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Fig. 3.

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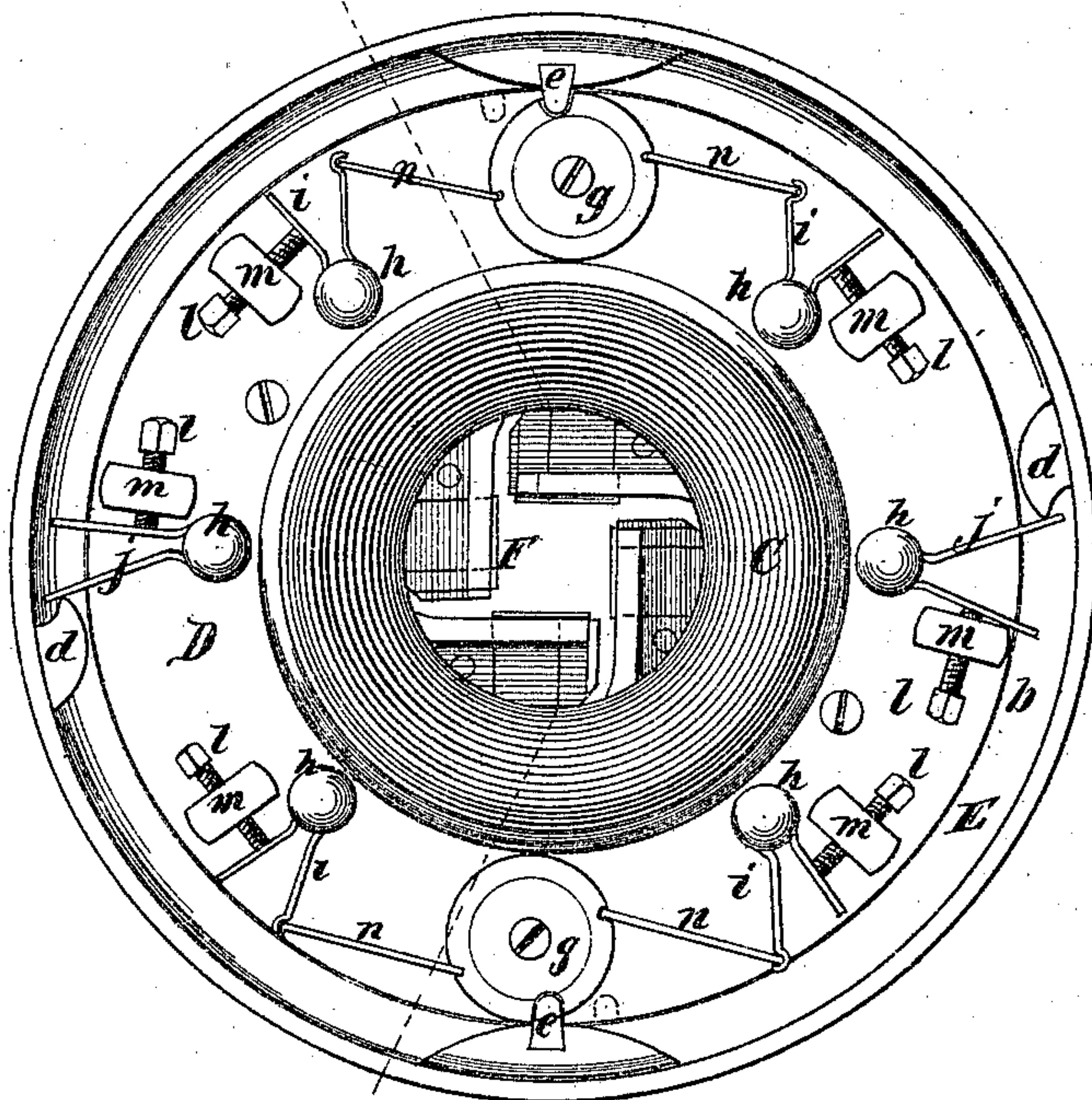
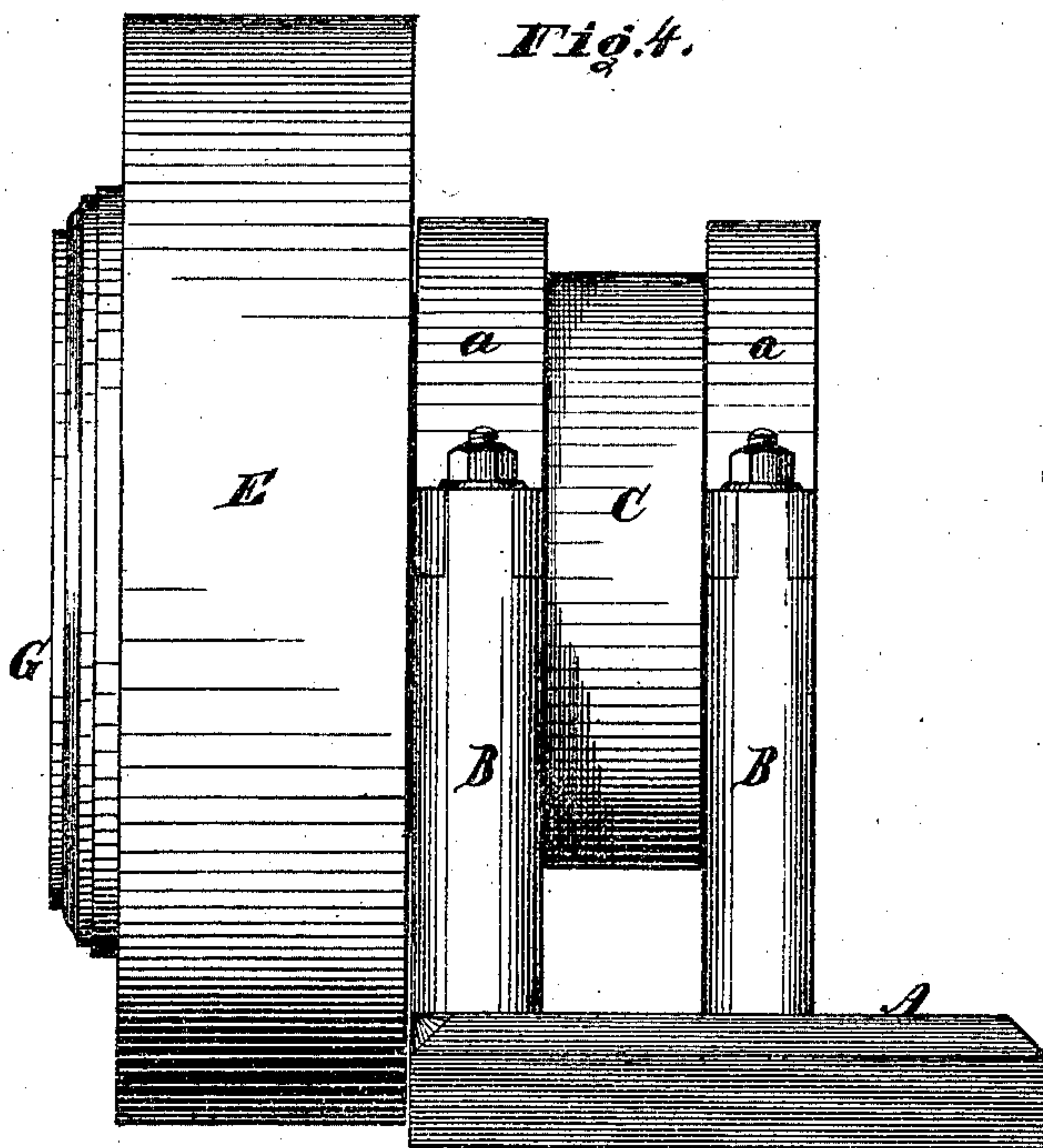


Fig. 4.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN LATHES.

Specification forming part of Letters Patent No. 123,058, dated January 23, 1872.

To all whom it may concern:

Be it known that I, THOMAS SULLIVAN, of Belleville, in the county of Hastings, Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Machines for Turning Scythe-Snaths, &c.; and I do hereby declare the following to be a full, clear, and exact description thereof, sufficient to enable those skilled in the art to which my invention appertains to fully understand and to make and use the same, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1, Sheet 1, is a front elevation of a machine constructed according to my invention complete, a small portion being in section. Fig. 2 is a similar view of the machine with face "circle" plate removed. Fig. 3, Sheet 2, is a rear end elevation of the working parts detached from the bearings. Fig. 4 is a side elevation of the complete machine. Fig. 5, Sheet 3, is a longitudinal sectional view of the same, the plane of section being indicated by the line *xx* in Fig. 2 and the dotted lines in Fig. 3. Fig. 6 is a perspective view of the outer rim detached. Fig. 7 represents, in side and edge views, the levers which carry the knives and burnishers detached.

The subject of this invention is a machine for rounding and polishing scythe-snaths and other crooked and tapering sticks. The improvements relate principally to the cutters and their application, and the mechanism for controlling and operating them. My invention consists in the construction, arrangement, and combination of parts, substantially as hereinafter described and claimed.

Referring to the drawing, in which similar letters of reference indicate like parts in the several figures—

A represents a base, of any suitable construction, provided with stationary bearings B B, in which the rotary cylinder or hollow journal C is mounted and confined by removable yokes *a a*. In the periphery of the cylinder are formed annular grooves which receive the edges of the bearings and the yokes, as seen in Fig. 5. With the cylinder or hollow journal is cast an annular face-plate or flange, D, to the rear side of which the equalizing springs are applied, as will be hereinafter de-

scribed. To the face-plate D is applied an outer movable rim, E, on the periphery of which runs the belt which drives the machine. On the inner surface of this rim is cast an annular flanged rib, *b*, which receives the face-plate D, as shown in Fig. 5. On one side of the rib *b*, cast upon the inner surface of the rim E, are sockets *c* to receive the ends of the levers carrying the cutters, as will be presently described; and upon the other side are lugs *d d*, for a purpose to be explained, and projections *e e* which serve partly to hold the rim and face-plate together, the latter having notches in the periphery through which the projections pass, and then the rim being slightly turned, the projections are moved away from the grooves and hold the rim to the face-plate. The projections *e e* serve another purpose, which will be spoken of in connection with the equalizing devices. The face-plate D is provided with projecting studs *f f*, on which the levers F F carrying the cutters are fitted to turn. A cast-metal annular plate or "circle," G, having recesses to receive the projecting ends of the studs is fitted on the same, and secured by means of screws passing through the face-plate D from the rear side and entering posts attached to the "circle." By this means the levers are kept in place. The outer ends of the levers, which are more or less rounded, enter the sockets *c* on the inner surface of the rim E. The sockets are widened from the mouth inward to permit the free play of the levers. The equalizing devices are located on the rear face of the plate or flange D. This is shown more particularly in Fig. 3, and will be now described: *g g* represent disks, which I term "rollers," fitted to turn on screws passing through a central hole in the roller and entering the plate D. In the edge of each roller is a rounded notch which receives one of the projections *e* on the rim E. On headed pins *h h* set in the plate or flange D are fitted bent springs *i i i i* and *j j*. The tension of these springs is regulated by means of set-screws *l l* passing through openings in posts or blocks *m* attached to the face-plate. *n n* represent flat narrow pieces of metal fitted between the springs *i i* and the rollers *g g*, the latter being provided with grooves in the periphery, each receiving one end of a piece, *n*, while the op-

posite end is held by bending the outer part of the spring *i*, as shown. The springs *j j* press against the lugs *d d* on the inner surface of the rim E. The form of the interior of the cylinder or hollow journal is shown in Fig. 5, increasing in diameter from the front to the rear. It is thus made to permit the passage of sticks having a large crook or curve. Instead of the form shown, the interior of the cylinder may be bell-shaped.

Referring now to Fig. 7, the knives and burnishers and the method of applying them will be described: When turning or rounding a stick the levers are each provided with a knife, *o o'*, having a rounded and beveled cutting-edge, as shown. The knife is made in angular form, and is secured by its shank *o'* to the part *p* of the lever by means of an overlapping clamp, *q*, and a key, *r*, one edge of which is beveled while the other is straight. A set-screw, *s*, holds the clamp after it has been adjusted. The knife may be adjusted in or out to cut a stick or thin shaving. The clamp and key may, if desired, be made in one piece. For polishing the turned work, the knives are removed and burnishers *t* are substituted. As will be seen from the drawing these burnishers differ from the knives only in this respect, that instead of a rounded cutting-edge the edge is straight and smooth. In general form and mode of application, the burnishers and knives are alike. The levers are provided with lugs rounded upon one side, to guide the stick in its insertion.

The operation of the machine will now be described: The snath, or other stick, varying in thickness or crooked, is first made eight-sided in cross-section, by means of a draw-knife or otherwise, and the small end is then inserted in the aperture between the inner ends of the levers. The stick is held and pushed through by hand, the cylinder being driven in the direction of the arrow, Fig. 1, by means of a belt passing around the outer rim. When a curve or enlargement occurs in the stick the levers are forced apart, the outer rim turning slightly upon the face-plate attached to the cylinder in a direction contrary to that represented by the arrow, Fig. 1. This movement of the rim compresses the springs which bear against the lugs on the rim, and by partially turning the rollers the remaining springs are also compressed. All the springs act upon the movable rim, and thus indirectly upon the levers, when a snath or tapering stick is passing through, until the springs which are compressed through the medium of the rollers lose their power by reason of the pieces connecting them with the rollers having come into a straight line with each other, and then passed beyond the same, and then the springs which bear against the lugs on the rim exert sufficient pressure upon the levers (which are now

on the larger part of the snath) for the completion of the work. Thus the pressure of the levers upon the stick or snath is made nearly or quite equal from the smaller to the larger end. After the stick has passed through, the rim—and with it the levers—returns to its former position automatically, the machine still running. When it is desired to polish the work which has been turned, the knives are taken out and the burnishers substituted. The machine is then put in motion and the sticks run through as before, the result being that the work is highly and expeditiously polished, ready for varnishing.

The machine, although principally intended for scythe-snaths, is adapted for general work, in turning crooked sticks, either with or without taper, straight tapering sticks, and those having swells in the center, as yard-arms and the like; and to operate on either description of work requires no change of parts, except for polishing, as already described.

An important saving in labor and expense is effected; and the construction is such that the various parts can be reached with facility and repaired, if necessary, though there is little liability to accident in a machine so simply made.

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

1. The equalizing devices herein shown and described, composed of the rollers *g*, springs *i* and *j*, with tension regulators, and pieces *n*, in combination with the hollow journal C, movable rim E, and levers F, all operating substantially as described.

2. The annular plate G, in combination with levers F F and a plate, D, substantially as described.

3. The knives and burnishers B, formed as shown and described, and adjustably attached to the levers by means of the clamps and keys, in the manner specified.

4. The equalizing mechanism composed of rollers *g g*, springs *i i* and *j j*, with tension regulators, and pieces *n*, applied to a plate, D, and controlling the cutting and polishing devices through the medium of a movable rim, E, all operating substantially as described.

5. The combination of the hollow journal C, face-plate D, movable rim E, the equalizing devices shown and described, lever F, carrying knives and burnishers, the annular plate G, and the supporting frame, all constructed, arranged, and operating as described, and constituting an improved wood-turning machine.

To the above specification of my invention I have signed my name this 15th day of April, A. D. 1871.

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