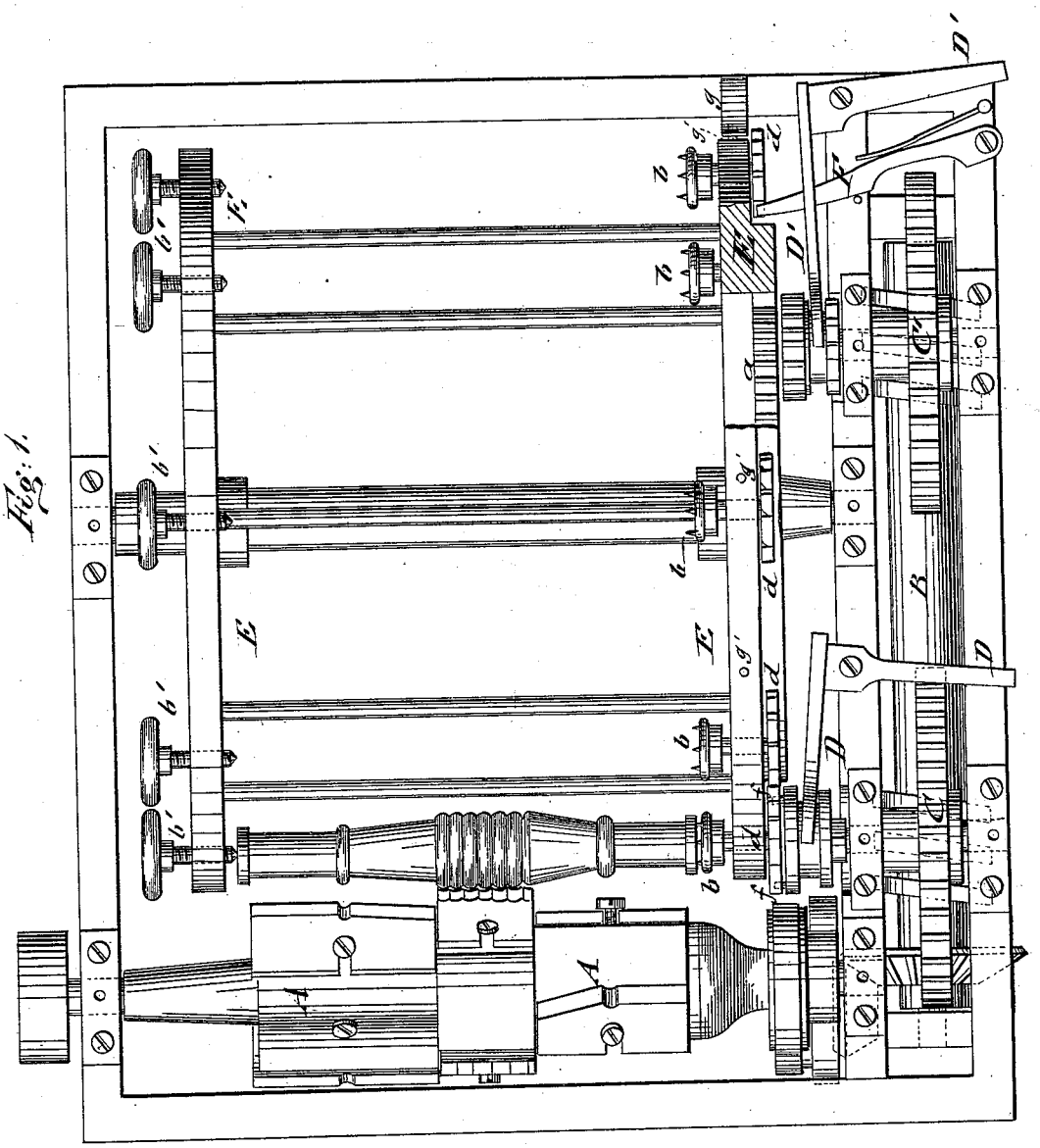
2 Sheets—Sheet 1.

R. BEAL.

Lathe for Turning Round or Polygonal Bodies.

No. 199,178. **Patented Jan. 15, 1878.**

Fig: 1.



WITNESSES:

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J. W. Scarborough.

INVENTOR:

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Fig: 3

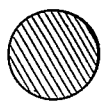


Fig: 4.

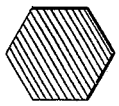


Fig: 5

Fig: 6.

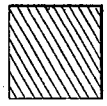
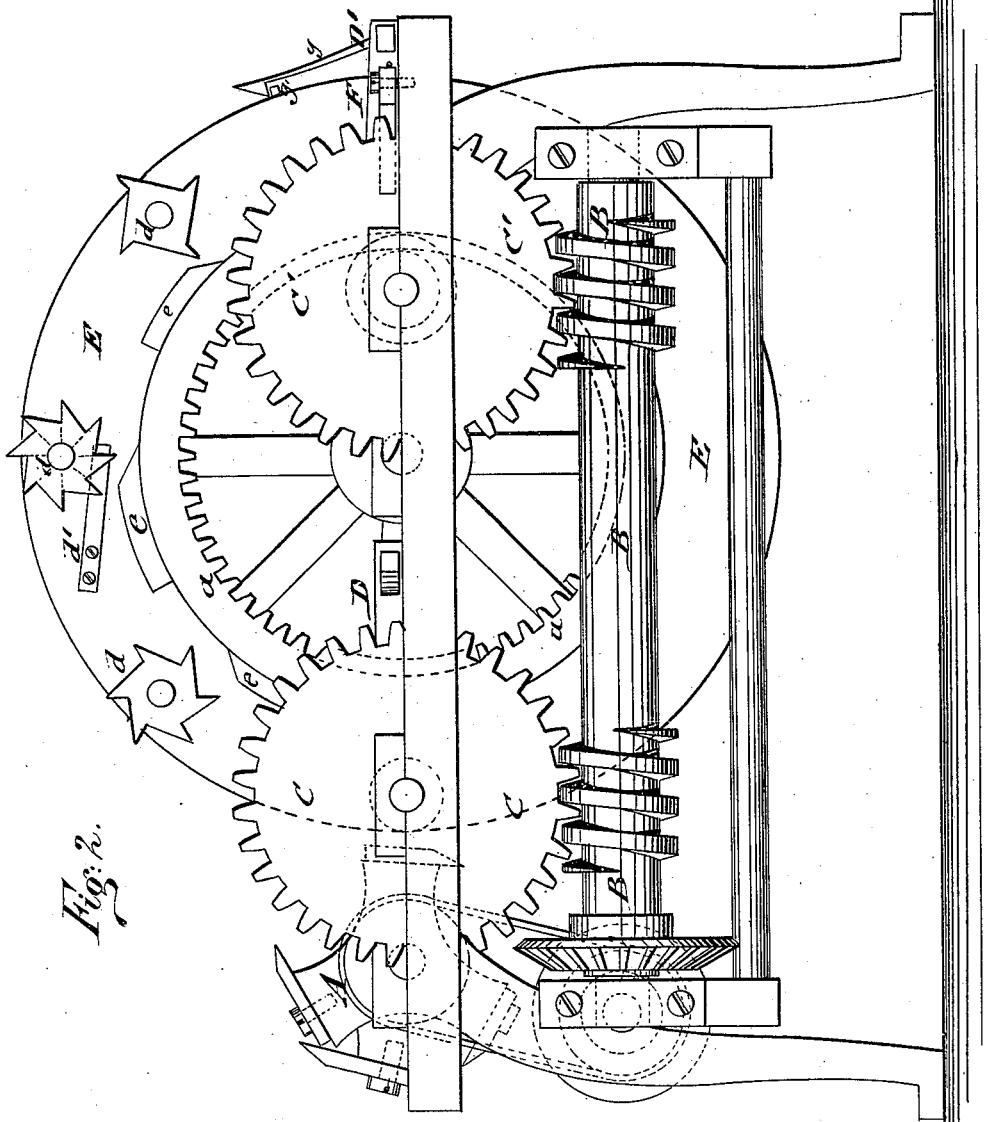


Fig: 2.



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UNITED STATES PATENT OFFICE.

ROYAL BEAL, OF ORFORDVILLE, NEW HAMPSHIRE.

IMPROVEMENT IN LATHES FOR TURNING ROUND OR POLYGONAL BODIES.

Specification forming part of Letters Patent No. **199,178**, dated January 15, 1878; application filed November 30, 1877.

To all whom it may concern:

Be it known that I, ROYAL BEAL, of Orfordville, in the county of Grafton and State of New Hampshire, have invented a new and Improved Lathe for Turning Round and Polygonal Bodies, of which the following is a specification:

In the accompanying drawings, Figure 1 represents a top view, partly in section, and Fig. 2 a side elevation, of my improved lathe for turning round and polygonal bodies; and Figs. 3, 4, 5, and 6 are cross-sections of round and polygonal bodies, as turned on the lathe.

Similar letters of reference indicate corresponding parts.

This invention relates to an improved lathe, by which a variety of round or angular bodies—such as legs for chairs, tables, bedsteads, pianos, and other articles of furniture, rounds for chairs, standards for tables, &c.—may be turned in better, quicker, and more economical manner than by the present modes; and the invention consists of a revolving sectional cutter, in combination with a slowly-revolving cylinder, to which a number of wooden blocks or blanks are secured, equidistant from the center, by chucks, which are turned by means of ratchets and a pivoted spring-pawl, so as to expose, after each revolution of the cylinder, a new side of the blanks to the action of the cutters, according to the number of teeth of the ratchets and number of sides to be produced.

For turning round bodies the cylinder is thrown out of gear and locked into fixed position, the ratchets of each chuck being successively thrown into gear with a clutch device and gear, and each individual block revolved thereby against the cutters.

Referring to the drawing, A represents a revolving cutter-head, that is arranged with cutting-knives of suitable shape, according to the pattern to be produced. The cutter-head is revolved from a power-shaft, and the power transmitted from the shaft of the cutter-head by cone-pulleys and belt to a bevel-gear, and by the same to a double worm-shaft, B, arranged at right angles to the cutter-shaft, and turning in side bearings of the supporting-frame of the lathe. The double worm-shaft B gears with two cog-wheels, C C′, of which the rear wheel, C′, is thrown by a clutch mechanism and lever, D′, in or out of gear with a cog-wheel, *a*, of a cylinder, E, so as to revolve the same slowly or leave the same in a position of rest. The cylinder E is constructed of spider-frame heads and lateral cross bars or braces, and provided with a number of chucks, *b*, and clamp-screws *b′*, at equal distances from the center, into which the wooden blanks are inserted and firmly clamped.

The cylinder may be arranged for any desired number of blanks, which are slowly revolved and successively exposed to the action of the rapidly-revolving cutter A.

The cutter-head is made in sections, which are secured in different axial positions on the shaft, the knives being also made in sections, to correspond to the pattern, and clamped in the customary manner to the cutter-head sections, so as to cut only with a short knife-section at the time, doing away with the strain and tremble of the large cutter, and substituting therefor an easy successive cutting process, while also equalizing the power required for propelling the cutter-head.

To the square end of the shaft of each clutch may be applied, at the outside of the cylinder, a ratchet, *d*, having four, six, eight, or more teeth, according to the number of sides which are desired to be given to the wooden blanks in the lathe. These ratchets are detachable, so that either kind may be applied to all the clutch-shafts, or different kinds, as desired.

The ratchets are retained by spring-catches *d′*, entering corresponding indentations at the under sides of the ratchets. A pivoted spring-pawl, F, of the supporting-frame projects into the teeth of the ratchets and engages them as the cylinder E revolves in connection with tapering fixed guide-pieces *e*, arranged sidewise of each ratchet, so that the pawl is forced into one of the teeth of the ratchet, overcomes the resistance of the spring-catch, and turns the ratchet and thereby the body for one tooth. Each full revolution of the cylinder causes the moving of all the ratchets by the actuating-pawl, and thereby the setting of each blank to a new side, so as to be turned off by the action of the cutters thereon. The bodies are thus successively turned on all sides, the cylinder being capable of producing bodies of uniform shapes, or of different shapes by having differ-

ent ratchets, as required. For the purpose of employing the lathe for turning round bodies, the cog-wheel C is also arranged with a clutch arrangement, and thrown by a lever, D, in or out of gear with the ratchets *d* of the chucks.

The clutch-pulley has projecting pins *f* at diametrically-opposite points, that enter into the teeth of a ratchet, so as to engage the same, and cause thereby the revolving of the ratchet and blank with the cog-wheel C, while the cylinder is locked into fixed position by a spring-catch, *g*, binding on pins or lugs *g'* at the circumference of one of the cylinder-heads. The cylinder has to be thrown out of gear with its revolving cog-wheels when round bodies are required to be turned. The rigid locking of the cylinder, together with the revolving of the blank next to the cutters, produces the round turning of the same. When the turning is completed the cylinder is unlocked, and the next blank and ratchet brought into position toward the cutters by applying the clutch to the ratchet of the next chuck and the locking-catch to the next pin, and so on, until all the blanks in the cylinder are turned off. In this manner the lathe can be used at will, either for turning off polygonal or round bodies, as shown in Figs. 3 to 6, according as the drum-revolving gear or the ratchet-engaging clutch is thrown into use. All kinds of wooden bodies may thereby be turned into any desired round or angular shape in a rapid, economical, and perfect manner.

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

1. The combination, in a lathe, of the rapidly-revolving cutters and of the slowly-revolving cylinder or drum, supporting the blanks by clamping-chucks, with a lateral spring-pawl that changes the position of the ratchets and blanks at each revolution of the drum and exposes a new side of the blank to the action of the cutter, substantially as and for the purpose set forth.

2. In a lathe, a revolving cylinder or drum having blank-carrying chucks, with notched ratchets, retaining spring-catches, and guide-pieces, in combination with a pivoted spring-pawl, that projects into and engages one tooth of each ratchet at each revolution of the drum, substantially as and for the purpose set forth.

3. The combination, in a lathe, of the revolving cutters and of the firmly-locked blank-carrying cylinder or drum, having clutches and ratchets, with a revolving clutch device, that engages the ratchet to expose one blank at the time to the action of the cutters for round turning, substantially as described.

ROYAL BEAL.

Witnesses:
EPHM. B. STRONG,
EMILY W. STRONG.