

J. BEAUDRY.

Lathe for Turning Irregular Forms.

No. 160,638.

Patented March 9, 1875.

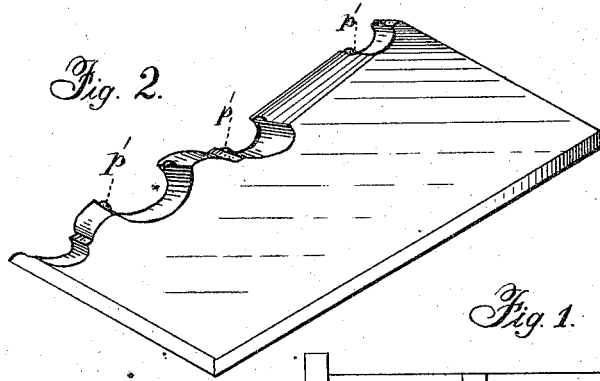
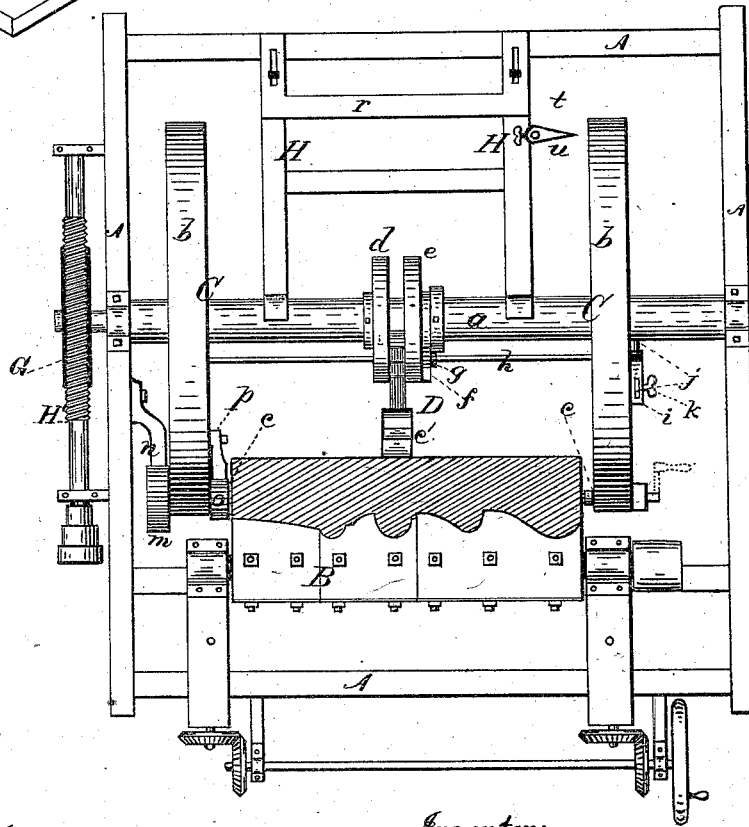


Fig. 1.



Witnesses:
 Thos. Moughton
 Will. H. Dodge

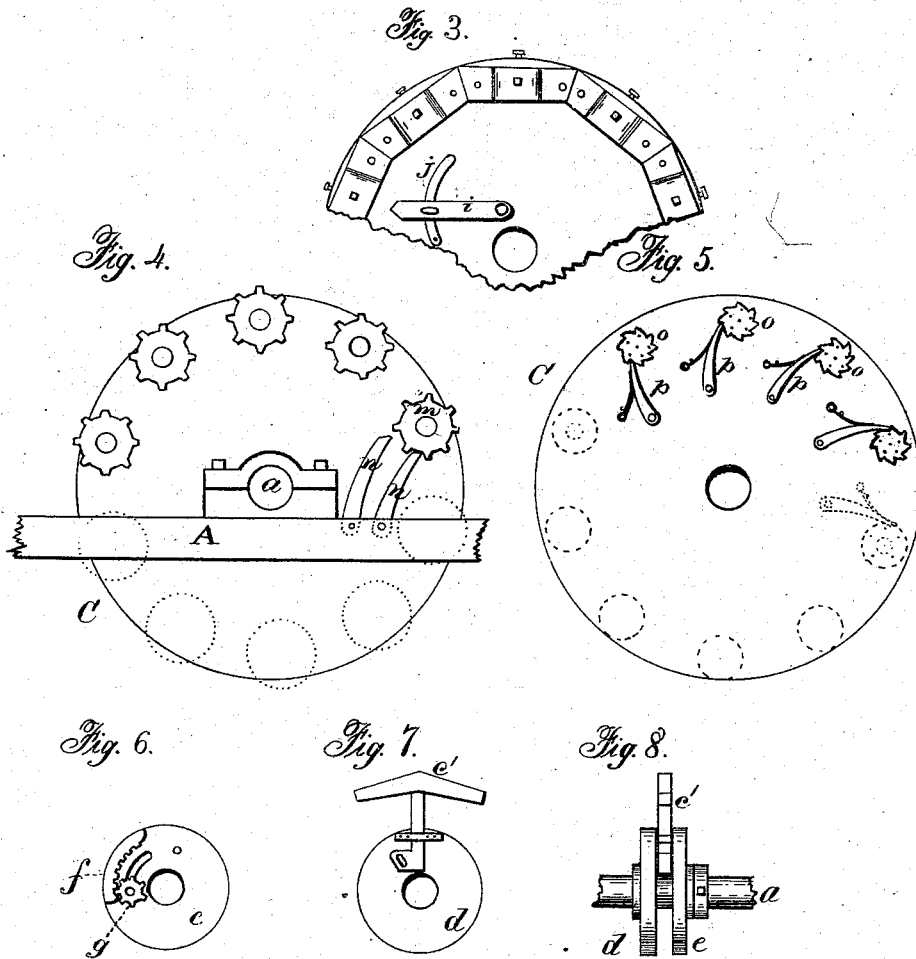
Inventor:
 Joseph Beaudry
 By his atty
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UNITED STATES PATENT OFFICE.

JOSEPH BEAUDRY, OF OTTAWA, CANADA, ASSIGNOR OF ONE-HALF HIS
RIGHT TO TOUSSAINT G. COURSOLES, OF SAME PLACE.

IMPROVEMENT IN LATHES FOR TURNING IRREGULAR FORMS.

Specification forming part of Letters Patent No. **160,638**, dated March 9, 1875; application filed
December 3, 1874.

To all whom it may concern:

Be it known that I, JOSEPH BEAUDRY, of Ottawa, in the Province of Ontario, Dominion of Canada, have invented certain Improvements in Lathes for Turning Irregular Forms, of which the following is a specification:

The present invention relates to improvements on the lathe for which Letters Patent were granted to me on the 3rd day of February, 1874; and it consists in an adjustable support for the wooden blanks, in an arrangement of devices for rotating the blanks to present their different faces to the cutters automatically, in the construction of the cutters, and in a frame or guide for centering the blanks.

Figure 1 represents a top plan view of my improved machine; Fig. 2, a perspective view of one of the cutters; Fig. 3, an outside end view of the frame which carries the blanks; Fig. 4, a view of the opposite end of the same; Fig. 5, an inside face view of one end of the same; Figs. 6, 7, and 8, views showing the adjustable or expanding supports for the blanks; Fig. 9, a cross-section of the cutter-bar.

The general construction and operation of the machine are the same as that described in my patent above referred to, the machine consisting essentially of a frame, A, containing a rotating cutter-bar, B, and a rotating frame, C, in which latter a series of bars or blanks are secured, so as to be carried around thereby and presented successively to the cutter. The rotating frame C consists of a central shaft, *a*, provided at its ends with disks or flanges *b*, having centers or arbors *c* which enter and hold the ends of the blanks. As the blanks or bars are held at their ends only, it is necessary, when they are light and small, to give them support at the middle in order to keep them from springing or bending while being acted upon by the cutter. For this purpose I mount on the middle of the shaft *a* a rest, D, provided with a series of radially-adjustable arms, *c'*, which bear against the inner sides of the blanks, as shown in Fig. 1. The rest consists of a disk, *d*, which is secured firmly to the shaft and provided with guides in which the arms *c'* slide, as shown in Figs. 1, 7, and

8, and of a second disk, *e*, which is left free to turn on the shaft, and provided with studs which enter slots in the inner ends of the arms *c'*, as shown in Figs. 7 and 8, so that, by turning the disk *e* on the shaft, its studs are caused to slide the arms *c'* inward or outward according to the direction of its movement. As shown in Fig. 7, the outer ends of the arms *c'* are made of a T shape, so that each one bears under and sustains two of the blanks, so that there need be only half as many arms as blanks.

In order to facilitate the adjustment of the rest-arms, the disk *e* is provided on its outer side with a segmental rack, *f*, in which there engages a pinion, *g*, secured on the end of a shaft, *h*, which latter is extended out through the end or head of the frame, and provided with an arm, *i*, as shown in Figs. 1 and 3, so that, by moving said arm, the pinion is caused to turn the disk and thereby move the arms of the rest. The end of the arm *i* slides on a curved bar, *j*, and is provided with a thumb-screw, *k*, by which it may be secured in position. It will be seen that, with the parts constructed and arranged as above, the simple movement of the arm *i* adjusts the entire series of rest-arms, so that blanks of any size may be quickly and firmly supported and as quickly released when they are to be turned to present other faces to the cutter. It is obvious that the form of the rest-arms may be varied, that there may be an arm for each blank, and that the manner of moving the arms may be modified, the only requisite being that they shall slide radially and be firmly held in position.

In my former machine, a solid cylinder was used to support the blanks, necessitating a change of cylinders for every change in the size of the blanks, and also necessitating the removal of the blanks in order to rotate them on the centers, and present their different sides to the cutter. By my present construction I save the cost of the cylinders and also the time and labor required in making the changes and adjustments.

My next improvement consists in the manner of securing and turning the blanks. In the present machine I provide the disks or

ends *b* of the rotating frame with rotating centers or arbors *c*, to enter and hold the ends of the blanks, as shown in Fig. 1, so that by turning the arbors the blanks may be turned to present any required side to the cutter without detaching them, as in the original machine. At one end of the machine I provide the arbors or centers *c* with spur-wheels *m* on their outer ends, and attach to the sides of the main frame one or more pawls or dogs, *n*, which, as the frame C rotates, act upon the different pinions in succession, so as to turn their arbors and thereby the blanks. After each blank has been carried past the cutter and had one face cut thereby, it is turned by means of the dogs and pinions so as to present another side to the cutter, and so on repeatedly, the blank being caused to present a new face each time it passes the cutter, until it is completed in the desired form. By changing the number of teeth on the wheels *m*, or the number and position of the dogs *n*, the blanks may be given any desired portion of a revolution at each movement, according to the number of faces it is desired to give the articles being made.

There may be two, three, or more of the dogs on the frame to act successively on each pinion, provision being made for throwing one or more of them out of operation, according to the distance or amount it is desired to turn the blanks.

In order to prevent the blanks from being turned by the action of the cutter, the arbors or centers at one end are provided with ratchet-wheels *o*, and the frame C provided with pawls *p*, which engage with the wheels, as shown in Fig. 5, so as to prevent the blanks from turning backward.

By means of the improvements above described I render the machine automatic in its operation, and enable it to run without stopping until all the blanks are cut and finished into the required forms, saving both time and labor over the original machine.

The rotating frame which carries the blanks is turned by means of a wheel and worm, as clearly shown in Fig. 1, in which G represents the worm-wheel, and H the worm, mounted in standards on the main frame, and provided on one end with a cone-pulley to receive the driving-belt.

The use of the wheel and worm in this particular connection is, I find in practice, quite advantageous, as it imparts a very steady and certain movement to the frame and blanks, and overcomes the irregularities experienced in the operation of the original machine.

In small machines, adapted for light work only, a hand-wheel, having handles or spokes like a common pilot-wheel, may be applied to the end of the worm to turn the same; or even applied to the shaft of the frame, in which case the worm and wheel will be omitted, and the frame operated directly by the hand-wheel.

The next novel feature in the machine is the cutter-knives, which, as shown in Fig. 2, are provided with a cutting lip or spur, *p'*, at each point or angle. These lips each cut a fine line into the wood in advance of the cutting-edge proper, so that the chips are taken out sharply and cleanly in the corners and angles, and a better and more finished piece of work produced than usual. The knives or cutters are in the form of flat plates, which are secured to the faces of a polygonal shaft by bolts, the heads of which engage in longitudinal T-shaped grooves in the shaft, as shown in Fig. 9, so that the knives may be adjusted endwise on the shaft.

By using combinations of short knives, and changing and transposing them, patterns of various forms may be produced.

The last improvement in connection with the machine consists in the guide-frame for centering the blanks as they are placed in the machine. In Fig. 1, H represents this frame in position for use, with one side supported on the main shaft *a*, and the other supported on the side of the main frame. It consists simply of a frame of the proper width to reach from the side of the frame to the shaft, having the ends of its arms curved to engage over the shaft, provided with an adjustable transverse bar, *r*, and with an upright arm, *t*, supporting an adjustable pointer, *v*. The bar *r* stands parallel with the cutter-shaft, and has its ends slotted and held by screws, so that it can be readily adjusted forward or backward. The pointer *v* is adjustable vertically on the arm, and is held by a thumb-screw, as shown.

In using the device it is applied as shown, and the pointer adjusted a distance equal to half the diameter of the blank above the guide-frame, and the bar *r* adjusted the same distance outside of the line of the centers or arbors. The blank to be centered is placed on the guide-frame and drawn up against the inner side of the bar, and then the rotating frame turned until the centers or arbors are in line horizontally with the pointer. This brings the arbors opposite the center of the stick, so that, upon being forced therein, the stick is accurately centered. After one stick or blank is secured the frame is turned forward and another introduced, and so on repeatedly until the whole number are inserted, when the frame is removed and the machine is ready for operation.

Provision is made for securing and releasing the blanks or sticks by providing the centers or arbors at one end with a screw, by which they are moved endwise.

What I claim as my invention is—

1. The expansible support or rest consisting of the disk *d*, having the sliding arms *e'* mounted thereon, and the disk *e*, provided with studs which enter slots in the arms, as shown and described.

2. In combination with the rotary frame, provided with the rotary centers or arbors *c*,

having ratchet-wheels m attached, one or more dogs, n , attached to the main frame, and operating as described to turn the blanks and present their different faces to the cutter automatically.

3. The knives or cutters, provided with lips p' , substantially as and for the purpose described.

4. In combination with the main frame A

and the rotating frame C, the frame H, provided with the adjustable bar r and adjustable pointer u , substantially as and for the purpose described.

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Witnesses:

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