F. BALDWIN.

WOOD TURNING LATHE.

No. 65,864. Patented June 18, 1867.

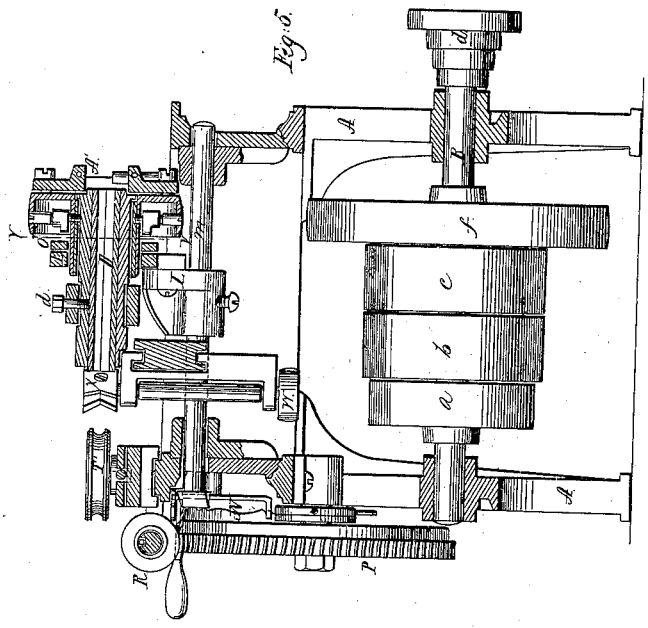

Fig. 5.

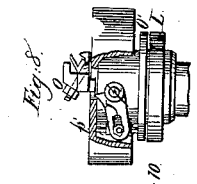

Fig. 8.

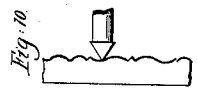

Fig. 10.

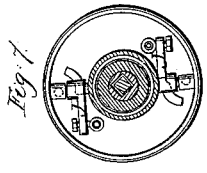

Fig. 7.

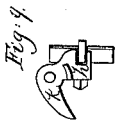

Fig. 9.

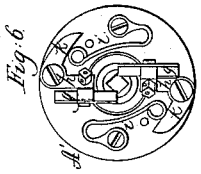

Fig. 6.

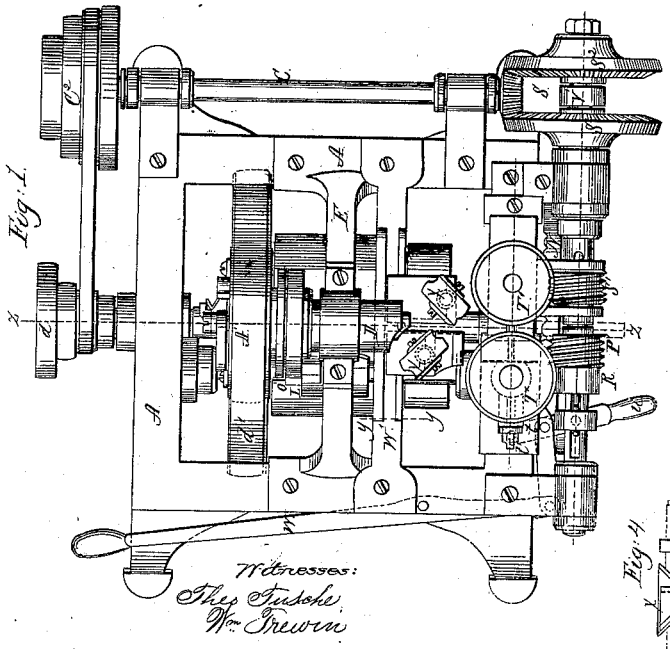

Fig. 1.

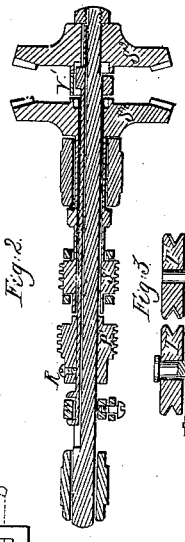

Fig. 2.

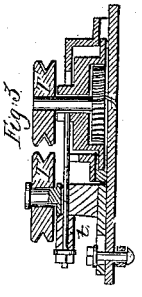

Fig. 3.

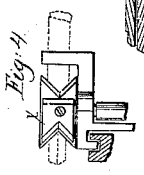

Fig. 4.

Witnesses:

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Per Munn & Co

Atty.

United States Patent Office.

FREDERICK BALDWIN, OF BRATTLEBORO, VERMONT.

Letters Patent No. 65,864, *dated June* 18, 1867.

IMPROVEMENT IN WOOD-TURNING LATHES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, FREDERICK BALDWIN, of Brattleboro, in the county of Windham, and State of Vermont, have invented a new and useful Improvement in Lathes for Turning and Cutting Square and Beaded Work; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention consists in the employment or use of rotating cutters in connection with a rotating pattern, a hollow stationary mandrel, and feeding device, the several parts being made to work automatically, whereby a machine is made capable of being operated rapidly, and at the same time performing its work in the most perfect manner, the lathe being designed for turning beaded work for various purposes, as, for instance, tool-handles, chair-rounds, balusters for stairs, &c.; and also, in addition to cutting beads or mouldings upon the pieces, to cut portions of the pieces in a square form wherever the same may be desired, the said beaded or ornamented square portions being cut simultaneously, or at one and the same operation.

Figure 1, sheet 1, is a plan or top view of the lathe.

Figure 2 is a longitudinal central section of the shaft by which the feed-rollers and the pattern-wheel are driven, it being through the line *x x* of fig. 1.

Figure 3 is a vertical section of the feed-rollers and worm-wheel, and also of the parts to which they are attached.

Figure 4 is a detailed section of the square cutters, through the line *y y* of fig. 1.

Figure 5, sheet 2, is a vertical section of the lathe, through the line *z z* of fig. 1.

Figure 6 is a front or face view of the cutting-disk, showing some of the parts by which the cutters are moved and governed.

Figure 7 is a section, through the line *v v* of fig. 5.

Figure 8 is another view of the same.

Figure 9 is a detailed view of the dog to which the cutters are attached, and by which they are actuated.

Similar letters of reference indicate like parts.

A represents the frame of the machine, which may be constructed of any suitable material, and in any proper form, to support the working parts of the lathe. B is the driving-shaft, which is placed on the lower part of the frame. It has pulleys on it within the frame, marked *a*, *b*, and *c*, which receive the belt or belts by which the shaft is revolved. On the outer end of this shaft there is another pulley, or cone of pulleys, *d*, from which another shaft is driven, which is on the upper portion of the frame, more plainly seen in fig. 1, marked C². There is also on the driving-shaft B another pulley within the frame of large diameter, marked *f*, which gives motion by a belt to two rotary cutters, which are attached to a disk, A′, which rotates on the stationary hollow mandrel, which is marked D on the drawing. Dies are placed in this mandrel to suit the size of the stick to be turned or cut, as it must be understood that all the work performed by the lathe passes through the hollow mandrel D. The mandrel is securely fastened to a cross-bar which is screwed or bolted to the top of the frame, and which is designated by the letter E. It is securely held in place by a set-screw, *d*, seen in fig. 5. This mandrel is a bearing for the cutter-disk, as before stated. The face of the cutter-disk is seen at fig. 6, sheet 2. *g g* represent the cutters. *h h* are dogs, to which the cutters are attached. *i i* are springs which operate on the arms *k* of the dogs, so as to throw the cutters towards the centre. The cutters are V-shaped, and are held to their places in the dogs by a screw hook which is drawn up or fastened by a nut, seen at *o*. This arrangement is plainly seen in fig. 6. The periphery of the cutter-disk is a flange, which turns in from the face, forming a pulley for the belt which drives it. It is driven by a belt from the band-wheel, marked *f*, fig. 5. Within the recess thus formed (back of the disk face) the dogs *h* are operated by a toe, J, which turns on a pivot, *p*. The other end of the toe has a slot, through which passes a small stud-screw, by which the toe is attached to a collar which slides on the mandrel. This collar is seen at *o*, fig. 8, and the connection of the toe with it is by a short rod, *p′*, which is fast to the collar, and into which the stud-screw, before mentioned, passes. The end of the rod *p′* passes through the face of the disk plate for the purpose of a guide and support to that end of it. Fig. 8 shows this arrangement, as the pulley or rim of the disk is broken away for the purpose of showing it.

It will be seen that as the collar o' is made to approach the disk, the toe J, turning on the pivot p, will strike a projecting lip on the dog, which passes through the face of the cutter-disk, and crowd the dogs with the cutters towards the centre of the disk. As the stick to be turned is passing through the hollow mandrel and disk plate, it only requires a suitable movement of the collar o' to enable the cutters to form beads and mouldings on the stick, as the cutters are thereby made to approach toward and recede from the centre. The springs i, on the face of the disk, operating upon the arms k of the dogs, serve to throw back the collar o', or act upon it with a constant pressure, so that it is only necessary for the collar to be forced towards the face of the disk to produce the desired result. The manner in which this is done I will now proceed to describe. Behind the collar o' there is seen the end of an arm which is attached to a rod which is made to slide longitudinally. The arm is marked L, and the rod m. The upper end of this arm, which is seen back of the collar o', slides freely on the mandrel and crowds the collar towards the disk. The rod m is supported by the frame in suitable bearings, as represented in fig. 5, and receives its lateral motion from the pattern, (a portion of which is seen in same figure at N.) This pattern is attached to the rim of a worm-wheel, marked P, near its periphery, seen at the left in fig. 5. The pattern is formed of a strip of sheet metal, the edge of which is cut to a shape to correspond with the article it is desired to turn or cut. The end of the rod m comes in contact with the pattern N. This end of the rod is V-shaped, and the edge traverses the pattern as the pattern is revolved by the wheel, in other words, the lateral forward motion of the rod is governed by the inequalities of the pattern, as this rod, as well as the collar o', is acted upon by the springs i i'', and pressed against the pattern so that the cutters receive a motion through the rod m and the arm L corresponding with the shape of the pattern. A detached view of the pattern, (or section of it,) with the end of the rod m, is seen in Figure 10. The worm-wheel P, upon which the pattern is placed, is driven by a perpetual screw, P', upon a shaft marked R, which is seen directly over the wheel P, and parallel with the face of the cutter-disk on the opposite side of the machine. Fig. 2 is a longitudinal section of this shaft. It is revolved by the shaft C through bevel-gears, seen at S.

T T' represent the feed-rollers, between which the sticks to be turned are passed into the machine. The wheel T' is driven by a perpetual screw upon the shaft R, marked S', which engages with a horizontal worm-wheel, R', fig. 3, upon the feed-rollers T' shaft. The perpetual screw P' is formed on a thimble, which is fast on the shaft. The other perpetual screw, S', is fast to a sleeve through which the shaft passes. This sleeve forms the journal, as well as the box and support for one end of the shaft, and has no lateral or longitudinal motion.

The shaft R has a bar or feather which slides in a slot or groove in the shaft which extends near its whole length, and which is operated by a shifting lever, u', the handle of which is seen on the opposite side of the machine. u also is a short lever for the same purpose. v' is a clutch placed between the bevel-gears S'' and S^2. The sliding-bar is made to engage with the clutch and the wheels at the pleasure of the operator, so that the shaft R may be rotated or stopped, as may be required; consequently the movement of the worm-wheel and the pattern is thus governed.

The feed-roller T has a lateral motion to accommodate pieces of different sizes. On the outside of it there is a spring which bears against its shaft with a constant pressure. Between the feed-rollers and the hollow mandrel there are two revolving heads, x x, which are attached to the top ends of vertical shafts. Upon these heads V-shaped cutters are fixed, whose cutting edges form a right angle, and they are placed in such a manner that upon a piece of wood being fed into the machine cornerwise, or with its angles parallel with vertical and horizontal lines, the V-shaped or right-angled cutters, when rapidly revolved, will plane the sides of the stick in a square form and to any desired size, or so that it will enter and pass through the die which is placed in the hollow mandrel. These cutters or planers X X are adjustable to suit different-sized squares, and, as noticed in the drawing, they do not stand directly opposite each other, but one is placed a little in advance of the other so as to prevent the cutters from interfering with each other. The dies (either round or square, and of various sizes, to suit the different kinds of work to be performed,) are secured in the mandrel by set-screws, or otherwise, and are changed as often as may be required. The cutters X X are rotated by belts which pass around pulleys which are on the lower ends of the cutter-shafts, one of which is seen in fig. 5 at w, and they are attached by suitable bearings to a cross-bar which extends across the top of the frame, and which is seen at w', fig. 1. A vertical section of one of these cutter-heads with its upper support, and also a stick passing through between the cutters, is seen in detail in fig. 4.

As seen in fig. 1, the cone pulleys d C^2 are connected by a belt which drives the shaft C. t, fig. 3, indicates an elastic rubber spring which acts against the feed-roller T, before alluded to. This spring is confined to a rod, t', which passes through it, as seen in the drawing.

Many of the essential features of this lathe were secured to me by Letters Patent bearing date August 24, 1858, and this application relates more particularly to improvements which I have since made.

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

1. The method, as herein substantially described, of operating the cutters on the rotating disk A' by means of the dogs h k, the springs i, the toe J, the collar o', the pin or rod p', and the arm L, which are moved and operated by the revolving pattern through the rod m.

2. I claim the clutch V', which is placed between the two bevel-gears for the purposes described, and which is operated by a shifting-lever and a sliding-bar, substantially as set forth.

FREDK. BALDWIN.

Witnesses:

KITTRIDGE HASKINS,

A. S. WARD.