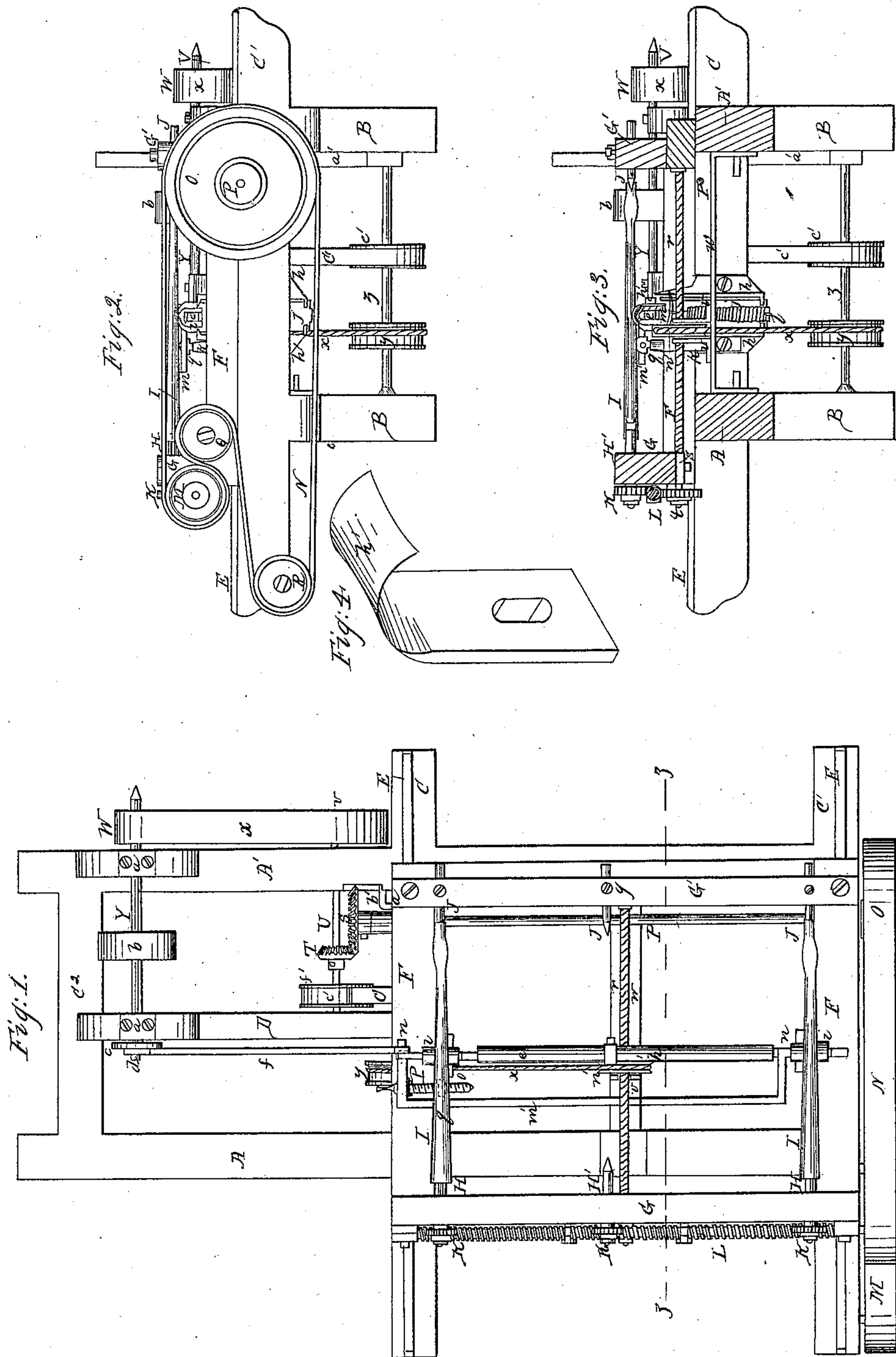


*W. Wadleigh,
Turning Irregular Forms.*

No 12,174.

Patented Jan. 2, 1855.



UNITED STATES PATENT OFFICE.

WARREN WADLEIGH, OF HILL, NEW HAMPSHIRE.

MACHINE FOR CUTTING IRREGULAR FORMS.

Specification of Letters Patent No. 12,174, dated January 2, 1855.

To all whom it may concern:

Be it known that I, WARREN WADLEIGH, late of Sanbornton, in the county of Belknap, now of Hill, in the county of Grafton and State of New Hampshire, have invented a new and useful Machine for Cutting Irregular Forms; and I do hereby declare that the same is described and represented in the following specifications and drawings.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and use, referring to the drawings in which the same letters indicate like parts in each of the figures.

Figure 1 is a plan or top view of the machine. Fig. 2 is an elevation. Fig. 3 is a section of Fig. 1, cut off at the line Z Z.

The frame of this machine consists of two parallel bars A A' supported by six legs B B. The bars A A' are connected together by the rails C C' and the end bar C² to form the frame of the machine, with the bar D between C' and C² and parallel with A. Each of the rails C C' are provided with a rib E for the scores in the bars F F which are fitted so as to traverse freely upon the ribs. The bars F F are connected together by the bars G G' to form a carriage as represented. The bar G is perforated to receive a series of arbors H H H' which are fitted to it and their front ends are provided with spurs to enter the blocks of wood or fitted to the patterns I I so as to turn them, the opposite ends of the patterns and the blocks of wood turn upon the dead centers J J fastened in the bar G' as represented.

There is a worm gear K fastened to the back end of each of the arbors H H which gears are acted upon by the screw L which is fitted to turn in boxes fastened to the bar G as represented. The screw L is turned by the pulley M which is fastened to it and operated by the belt N from the pulley O which pulley O is fastened to the shaft P which is fitted to turn in holes made for that purpose in the rails C, C'. The pulley Q turns upon a stud fastened in the bar F of the carriage, and the pulley R on a stud fastened in the rail C'; so that the belt N passes from the pulley O around the pulleys R and Q onto M as represented; by this arrangement the pulley M is allowed to traverse with the carriage as the distance between M and O is increased or diminished the distance between Q and R is diminished or in-

creased at the same rate so that the belt N may always remain of the same tension. The shaft P has the bevel gear S fastened to it which is driven by the pinion T on the shaft U which shaft turns in holes fitted for it in the bars D and A' and is provided with a pulley V which receives its motion from the pulley W by the belt X. The pulley W is fastened to the shaft Y which turns in boxes a a fastened to the bars D and A', and has the pulley b fastened to it to which a belt may be applied to operate the machine. The shaft Y has the disk c fastened to it which carries the crank pin d to operate the cutter bar e to which it is connected by the rod f as represented, so as to traverse the bar e and cutter h' to reduce the rough blocks of wood to the form required. There are some brackets h h fastened to the rails C C', with projections on each end provided with scores to which the slides j j are fitted so as to traverse freely; the upper end of these slides are provided with scores to which the boxes i i are fitted; which boxes are also fitted to the sliding cutter bar e so that it traverses in them. The tops of the boxes i i are rounded and made smooth and are pressed against the patterns I I by the springs l fastened to the lower ends of the slides j j and to the rods m which are put through the brackets h h for that purpose; only one of the springs and rods are shown in the drawing. The springs l yield and allow the patterns I I to force the boxes i i and cutter bar e down as they turn, while the springs press the boxes constantly against the patterns which vibrate the bar and cutters perpendicularly so as to cut the rough blocks of wood or other materials into the form required.

The bar m' is made in the form represented with a wedge n n at each end which wedges lie between the cutter bar e and the boxes i i. The screw o is fitted to turn freely in the bar m' and is held in its place by the pin p and is fitted to a female screw in the slide q (see dotted line in Fig. 1), which is fitted to move up and down in the stand k which is made in the form represented and fastened to the rail C by the same screw that fastens the bracket h. The person operating the machine can turn the screw o and traverse the wedges n n while the machine is in operation so as to vary the distance between the cutter bar e and the patterns

I I so as to cut the articles made upon the machine to the size required whether larger, the same size, or smaller than the patterns. The carriage is traversed by the screw *r* which turns in the box *s* fastened to the bar *G* and in a hole fitted for it in the opposite side of the carriage; this screw has the worm gear *t* fastened to it which is acted upon by the screw *L* to turn the gear and screw *r* in the nut *n'* which nut is held in its position between the bars *A A'* by the brackets *v v* fastened to the bar *w* which bar is fastened to the aforesaid bars *A A'*.

The nut *n'* consists of a pulley with a female screw in it to fit the screw *r* and a score in its periphery for the band *x* which connects it to the pulley *y* on the shaft *z*, one end of which is fitted to turn in the leg *B*, and the other in the end of the traversing bar *a'* which is fitted to traverse in the brackets *b'* fastened to the bar *A'* so that it may be raised and lowered to tighten and loosen the belt *c'* from the pulley *e'* on the shaft *z* to the pulley *f'* on the shaft *U*. The traversing bar *a'* has a score in it so that it can be hooked onto the bracket *b'* and leave the belt *c'* so loose that the shaft *z* and nut *n'* will cease to rotate and the carriage will be moved by the screw *r*; but if the bar *a'* is unhooked and allowed to drop down it tightens the belt *c'* which operates the shaft *z* so as to turn the nut *n'* by the band *x* just as fast as the screw *r* turns and stops the carriage.

The cutter bar *e* may be made in the form represented or of such other form as may be desirable and provided with one or more cutters *h'* for each piece of wood to be cut, and these machines are usually made to cut ten at once but may be made to cut such a number as may be desirable. Fig. 4 represents a two edged cutter such as have been advantageously used in these machines.

The machine having been constructed and completed as above described, the carriage is placed by operating the screw *r* so that the cutter bar *e* is near the bar *G'* and under the dead centers *J* which are drawn back and the pieces of wood to be cut, are placed upon the spurs of the arbors *H'* and the dead centers pressed forward into them and secured by screws like those represented *g'*. These pieces of wood should be a little shorter than the pattern so as to be cut the entire length without carrying the patterns past the boxes *i i* either way; when they are all properly arranged the machine may be set in motion and the pieces of wood will be turned by the arbors and cut into the form required by the cutters. The pieces of wood may be traversed across as many times as may be desirable.

I contemplate that two cutters to operate upon the same piece of wood may be fastened to the same cutter bar and one of them

set a little higher than the other so as to follow it and finish the work. Or two cutter bars may be used side by side and operated in opposite directions, so that the stroke of one cutter will counteract the other and in this way small articles or those which are comparatively slender may be cut without the inconvenience of a back rest. Besides I contemplate arranging a cutter bar and cutters so as to be operated by the same patterns above the pieces to be cut and making the cutters to cut in an opposite direction, and at the same time that the cutters do below, so that the tendency of one cutter to spring the article cut will be counteracted by the other so as to cut very slender articles without a back rest. Also to give the blocks of wood an intermittent motion or the pieces to be cut and the patterns so as to let them stop while the cutter is cutting, or to move them faster as may be most desirable. And further by using a screw with the thread cut in one direction to turn the pattern and in the other to turn the pieces to be cut a left hand last may be cut from a right hand one or vice versa. And by making the gears which turn the patterns of one size, and the gears which turn the pieces to be cut of another, a spiral post or other article can be cut from a straight pattern, and thereby save the expense of making a spiral pattern, or a piece may be cut more or less spiral than the pattern. Also that the machine may be modified in various ways to suit the different circumstances and purposes for which it may be used without departing from the principles or merits of my invention.

This machine costs far less than any other machine or number of machines to do the same amount of work in a given time and will require far less labor to tend it as ten pieces to be cut are put in and taken out at each time the machine is stopped and started. Besides the distance between the cutter bar and patterns can be varied by the operator while the machine is in motion so as to make the article cut the size required, whether larger the same size, or smaller than pattern.

The cutter is traversed in a straight line and make a more uniform surface which can be finished with one half of the labor and expense required to finish the surface cut by a rotary cutter. Besides a rotary cutter forces the piece cut from the center of motion and it springs back beyond its natural or proper position so that more than the required quantity is cut off. But my reciprocating cutter springs the article cut nearly in the same line which it moves, and therefore makes a much better and more perfect surface upon the piece cut; besides there is not the same occasion or necessity for a back rest.

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

1. A reciprocating cutter with one or two edges guided or governed by one or more
5 patterns so as to cut the rough blocks or pieces of wood or other material into the form required substantially as described.

2. The wedges *n n* or their equivalents so constructed and arranged as to enable the
10 operator to vary the distance between the

pattern and cutter bar while the machine is in motion for the purposes set forth substantially as described.

In testimony whereof, I have hereunto signed my name before two subscribing witnesses. 15

WARREN WADLEIGH.

Witnesses:

GEO. W. NESMITH,
AUSTIN F. PIKE.