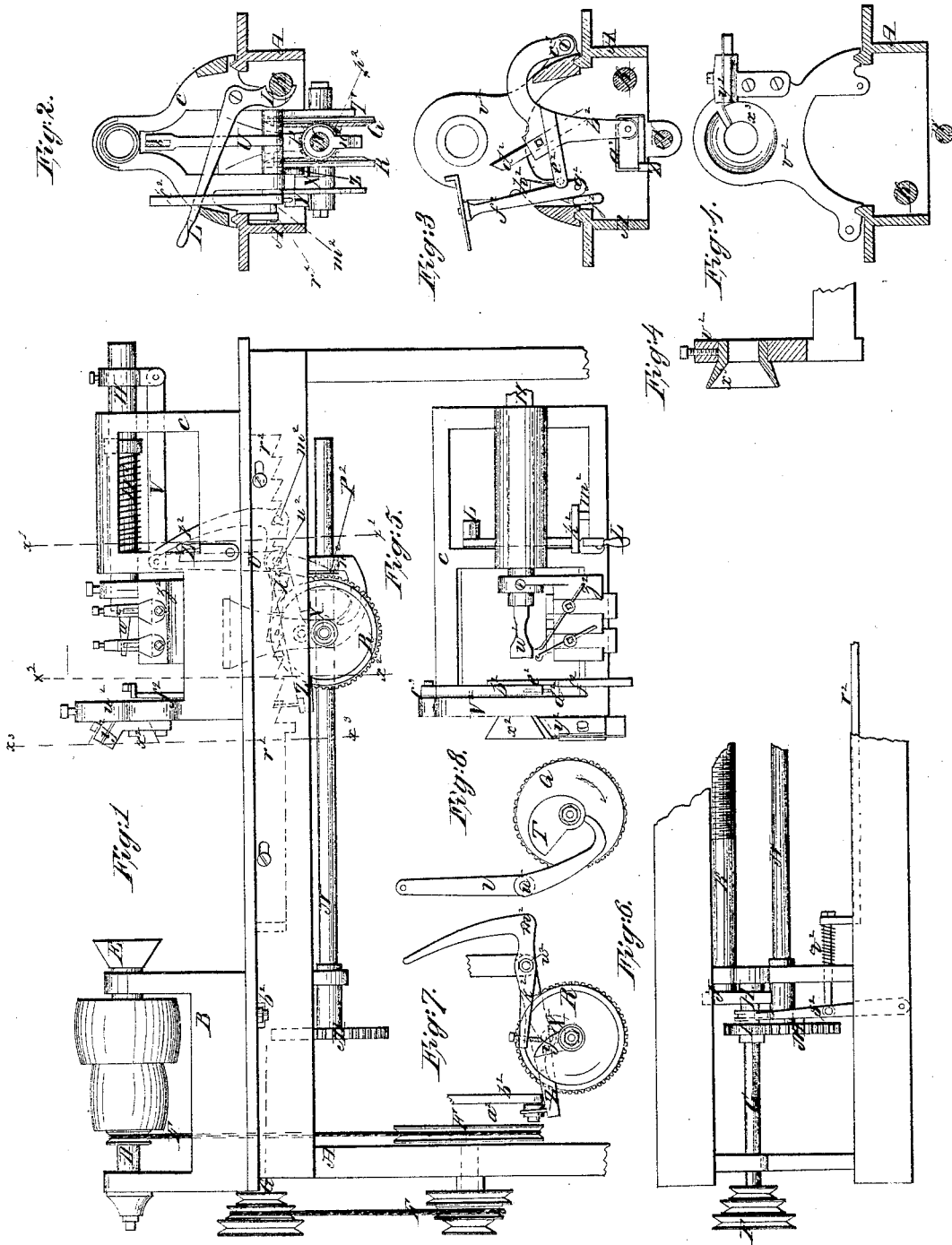


*A. S. Newton,*

*Turning Regular Forms.*

*N<sup>o</sup> 18,646.*

*Patented Nov. 17, 1857.*



# UNITED STATES PATENT OFFICE.

ALEXANDER S. NEWTON, OF BRANDON, VERMONT.

## MACHINE FOR TURNING WOODEN BOXES.

Specification of Letters Patent No. 18,646, dated November 17, 1857.

*To all whom it may concern:*

Be it known that I, ALEXANDER S. NEWTON, of Brandon, Rutland county, and State of Vermont, have invented certain new and useful Improvements in Machinery for Manufacturing Round Wood Boxes, Thread-Spools, Bobbins, and for other Purposes; and I do hereby declare the following to be a full description of the same.

10 The nature of my invention consists, first, in the combination of the propelling apparatus, consisting of a shaft, having on it two carrying cog wheels, which are intermittently and alternately thrown into gear, 15 (by a crotch lever operated by a cam motion hereafter described,) with a cog wheel on the tail stock feeding screw, and a second cog wheel on the end of a grooved rod, having on its opposite end a bevel cog wheel for 20 operating the chisel and cutters of the tail stock, the said parts being propelled by suitable pulleys, connecting with the arbor of the chuck or lathe.

25 The second part of my invention consists in the use and combination of the bevel cog wheel on the grooved rod, with a cog wheel gearing into the same having a cam attached to the back thereof, and a lever for operating the inside chisel in the tail stock 30 for boring out the box.

35 The third part of my invention consists in the use and combination of the bevel or spur cog wheel on the grooved rod, with a right side cog wheel gearing into the same, having two cams attached to the back thereof, for operating, first the cutters for cutting off and discharging the box from the lathe, and second, a lever having a pin in it to 40 operate a rack intermitting and alternating the feed motion of the tail stock, and cutting apparatus.

45 The fourth part of my invention consists in the use and combination of the chisel holder, with the finishing cutter holder, united together as one slide rest, for the purpose of combining uniformity of action in the boring and finishing cutters.

50 The fifth part of my invention consists in the use and combination of the cutter for severing the box when made, from the stock of wood, and discharging apparatus, with the lever and cam for operating the same.

The sixth part of my invention consists in combining the reducing cutter holder head with the tail stock spindle support- 55 ers, for the purpose of giving uniformity and solidity of motion in the tail stock, and making a slide way upon which the finishing tools stock holder moves.

60 The final part of my invention consists in the combination of all the said several parts as an entire combination and arrangement of mechanism for the objects specified. But to describe my invention more particularly I will refer to the accompanying draw- 65 ings forming a part of this specification, the same letters of reference wherever they occur referring to like parts.

70 Figure 1, is a front view of the lathe. Fig. 2, is a transverse cut section of the lathe through the line  $x, x$ , Fig. 1. Fig. 3, is a transverse cut section of the lathe through the line  $x^2, x^2$  Fig. 1. Fig. 4, is a transverse cut section of the lathe through the line  $x^3, x^3$ , Fig. 1. Fig. 5, is a plan view 75 of the tail stock. Fig. 6, is a plan view of the intermittent and alternating propelling apparatus. Fig. 7, is a detached side view of the cams for operating the cut off cutter, and levers for intermitting and alternating 80 the feed motion. Fig. 8, is a detached side view of the cam and lever for operating the chisel.

85 Letter A, is the frame of the lathe, on the shears of which are adjusted a head and tail stock B, and C. In the head stock is arranged a spindle D, having suitable pulleys, and on the end of it, a universal screw chuck E, for holding the stick of wood.

90 Letters F, F, are belts and reducing pulleys for working the lathe.

95 G, is a propelling shaft, on which are adjusted two loose cog wheels H, and I. The cog wheel H, gears into a wheel J, on the end of a horizontal shaft K, having screw threads cut on it, so that when thrown into gear with a female latch screw L, attached to the tail stock, it is fed forward the required distance to make the box. It will be obvious that a lever and cam, or a screw 100 and gear, connecting the grooved rod and vertical shaft, so as to dispense with the long screw, or a weight or coiled spring, may be substituted, as a means for feeding

up the tail stock. I do not therefore limit myself to either of these devices but desire to use either of them as circumstances or convenience may require.

5 The cog wheel I, gears into a wheel M, on the end of a horizontal grooved rod N, supported in suitable guides  $n^2$ , on the underside of the tail stock. On its opposite end, is a bevel cog wheel P, in the bore of  
10 which is a feather  $p^2$ , fitting into the groove of the rod, so that it may slide backward and forward thereon, (but not rotate except with the rod) to keep in gear with the right and left bevel cog wheels Q, and R, supported by hangers S, on the underside of the tail stock, as the same is being fed up by the feeding apparatus to make the raw box.

Attached to the back of the wheel Q is a cam T, which as it rotates, operates a lever V, secured by a pin  $v^2$ , to the lower side of the tail stock. To the upper end of this lever is attached a connecting rod V, the opposite end of which is secured to a mandrel W, of the tail stock so that as the cam rotates, the mandrel (and chisel  $W^2$ , secured therein) and slide rest of the finishing cutters, through the action of the lever and connecting rod, are projected forward, so as to bore and finish the box, which when done,  
25 the cam releases the end of the lever, and the mandrel and slide rest resume their places again by the reaction of the spring  $W^3$ , attached thereto and to the tail stock.

Letters X, and Y, are cams attached to the back of the right side bevel cog wheel R. The cam X, operates the end of a lever Z, having its back end secured by a pin  $z^2$ , to the under side of the tail stock, and in its front end an oblong slot  $z^3$ , into which the  
40 lower end of the cutting off cutter lever  $b^2$  works on a friction roller to facilitate its motion. This cutting off cutter lever is shaped like an inverted hook having its center of motion  $c^3$ , secured to an ear piece of the tail stock, and the detaching cutter  $d^2$ , adjusted at the apex of the curve of the lever, forming thereby a curved lever of the second order, so that as the cam X, elevates the lower end of the lever, the point of the cutter  $d^2$ , describes an arc, and thereby gives  
50 a motion to the point of the cutter like that given by the hand operator to sever the box from the stock of wood. Attached to the cutting-off cutter-lever, is a rod  $e^2$ , the object of which is to operate the discharging bar  $f^2$ . This bar is secured by a pin  $g^2$ , to the inside of the guides of the tail stock, directly fronting the cutter, and is held back by a pin in the end of the rod, acting against  
60 a cam  $h^2$ , on the bar  $f^2$ , till the box is severed from its stock when the pin slips off the cam, and by means of a reacting spring  $j^2$ , the upper end of the discharger flies forward and knocks the box from the lathe.

Letter Y, is a second cam secured to the back of the right side of the bevel or spur wheel R. This cam operate a lever  $k^2$ , secured by the pin  $u^2$ , to the under side of the tail stock, and having its upward bent end, bending over the handle of the latch  
70 screw lever L, so that as the latch screw is raised, to throw it out of gear with the screw K, the same operation lifts the upward bent end of the lever  $k^2$ , and disengages a pin  $m^2$ , secured in its back end,  
75 from a horizontal rack  $r^2$ , and thereby allows the tail stock to be set back, or readjusted at the end of the lathe. The object also of this pin, is to operate on the teeth of the rack to intermit and alternate the  
80 feed of the tail stock, and operate the cutters, by means of a crotch  $s^2$ , on its front end working between the cog wheels H, and I, on the propelling shaft G, and thereby as the feed motion moves the tail stock forward the requisite depth of the box, the pin  
85  $m^2$ , also moves the rack forward, till the crotch  $s^2$ , throws the cog wheel H, out of gear with the pinion wheel J, to stop the feed motion of the tail stock. At the same  
90 time, the crotch, throws the cog wheel I, into gear with the wheel M, on the grooved rod N, setting the cutting apparatus in motion till the cam Y, by its rotation releases the pin  $m^2$ , from the rack  $r^2$ , on the finishing  
95 of the box, when by means of a spring  $l^2$ , the rack is thrown back and the cog wheel H, again brought into gear with the wheel J, to feed up the tail stock as before described.

Letter V<sup>2</sup>, is the reducing cutter holder head, having a funnel shaped throat  $x^2$ , and reducing cutter  $y^2$  secured thereto, for rounding or reducing the block of wood. This reducing cutter head is combined with  
105 the tail stock, as one solid piece of metal, having between it, and the supporters of the mandrel, a slide way, on which a finishing tool slide rest  $z^2$ , slides. This slide rest is united with the mandrel of the boring chisel,  
110 and forms one solid piece of metal, the object of which is to give a simultaneous and uniform motion to the cutters in boring and finishing the box, without the intervention of independent devices for accomplishing  
115 the same result.

Having now described my invention I will proceed to set forth what I claim and desire to secure by Letters Patent of the United States.

1. I claim the use of the combination of the grooved rod and bevel wheel on the end thereof, with the wheel Q, and cam T, substantially as set forth.

2. I also claim the use and combination  
125 of the grooved rod and bevel wheel on the end thereof, with the wheel R, and cams X, and Y, substantially as set forth.

3. I also claim the use and combination  
of the cam X, with the lever Z, cutter lever  
 $b^2$ , and discharging bar  $f^2$ , or their equiva-  
lents separately or collectively for the pur-  
5 poses set forth.

4. I also claim the cam Y, in combination  
with the lever  $h^2$ , and rack  $r^2$ , or equivalents

for the said parts substantially as set forth,  
and for the purposes hereinbefore described.

ALEXANDER S. NEWTON.

Witnesses:

L. W. KIMBALL,

L. V. REED.