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J. KIELAN'S

GANG LATHE

PATENTED FEB 21 1871

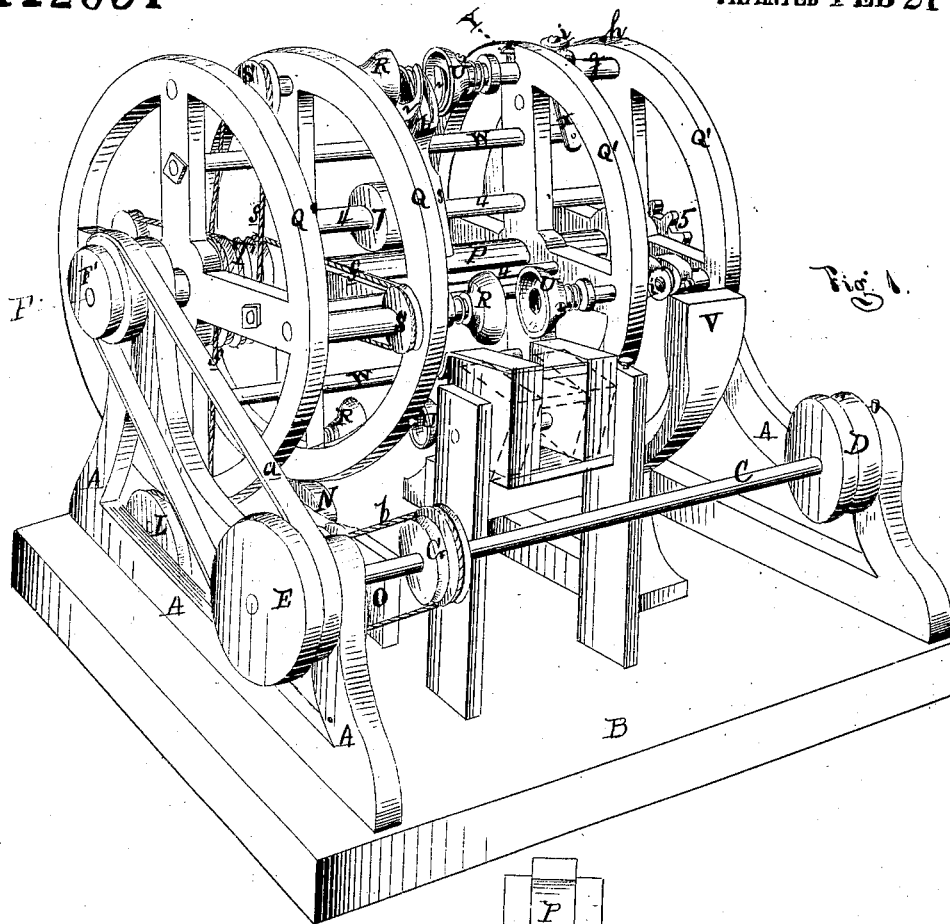


Fig. 1.

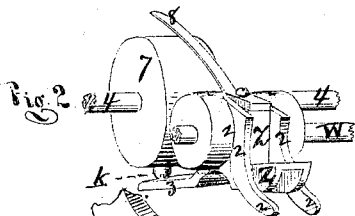


Fig. 2.

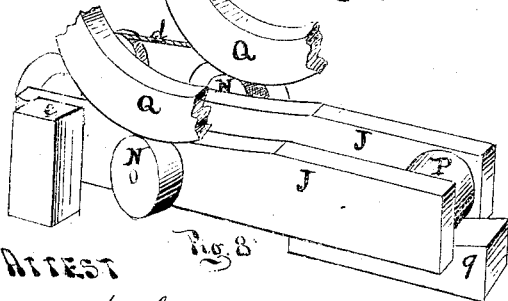


Fig. 3.

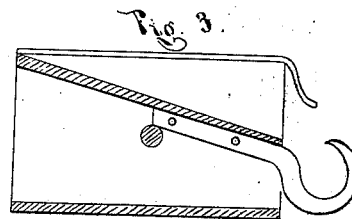


Fig. 4.

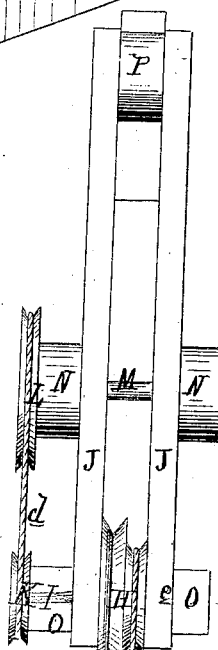


Fig. 5.

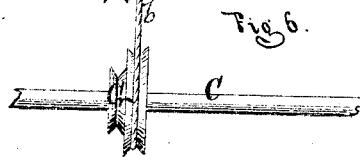


Fig. 6.

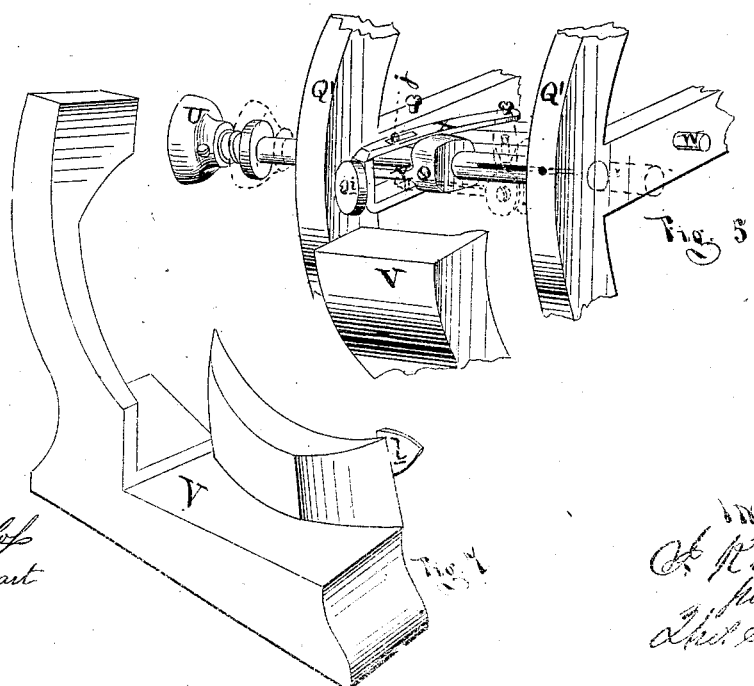
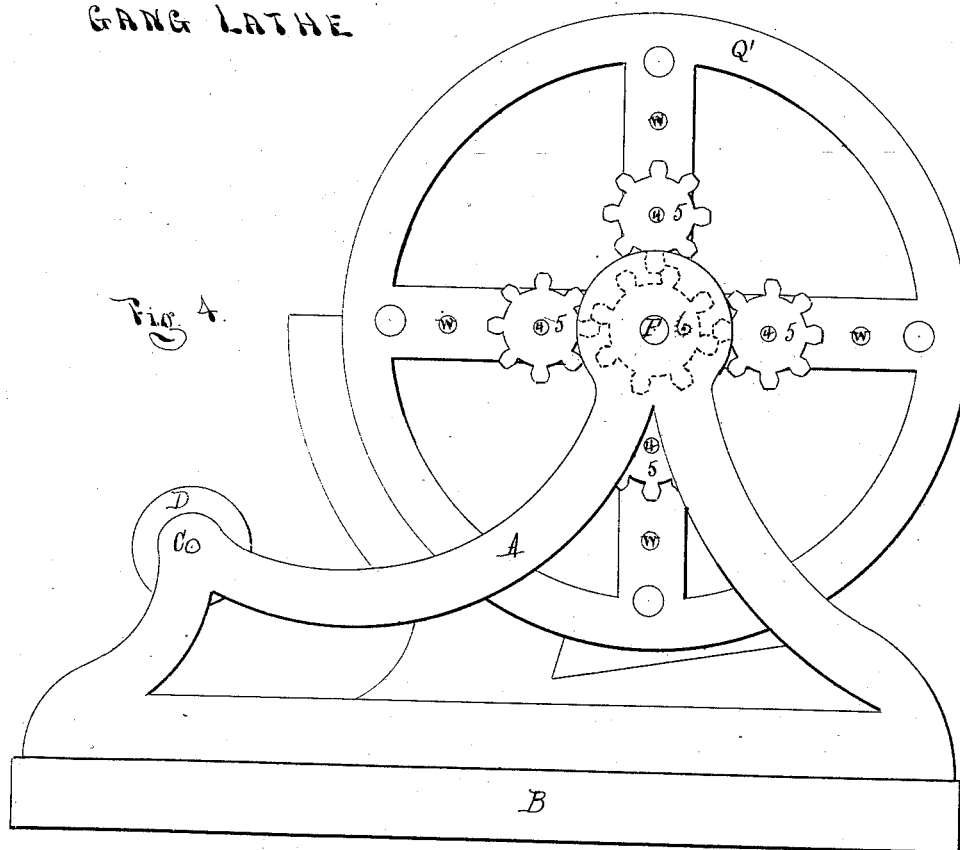
ATTEST

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J. KIEVLAK'S
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Letters Patent No. 112,051, dated February 21, 1871.

IMPROVEMENT IN 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, JAMES KIEVLAN, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful improved Revolving Gang-Lathe; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawing making a part of this specification, in which—

Figure 1 is a perspective view of my improved lathe.

Figure 2 is a perspective view of the cutter.

Figure 3 is a longitudinal vertical section of the feed-spout.

Figure 4 is an elevation of one end of the lathe.

Figure 5 is a perspective view of the devices for operating the tail-spindles.

Figure 6 is a plan view of certain parts of the driving mechanism.

Figure 7 is a perspective view of the guide which operates the tail-spindles.

Figure 8 is a perspective view of the frame and devices for regulating the motion of the spiders.

In all the figures the same letters are employed in the indication of identical parts.

This invention relates to automatically operating lathes for wood-turning, and is an improvement upon the machine set forth in Letters Patent No. 95,694, granted to me on the 12th day of October, A. D. 1869.

The improvement consists in combining with the head and tail-spindles, which carry the stick to be operated upon, cutters, which are carried upon the same spiders or disks with the spindles, and are brought into action while the stick is revolving.

In carrying the distinguishing principle into effect new combinations and arrangements of the parts of the machine have been required, which will be distinctly indicated in the following specification of construction and claims.

In the annexed drawing—

The parts A A and B constitute the frame of the machine, the sides having such shape as may be necessary for carrying the shafts of the operative mechanism.

The power taken from any convenient prime mover is applied to the driving-shaft C by means of the ordinary tight and loose pulley D.

From this shaft motion is communicated by the belt a and pulley B to a pulley, F, on the shaft E. These pulleys may be the ordinary cones as used to regulate the speed of the driving-shaft.

The shaft F has its bearing in the side frame-pieces A A.

The wheels or spiders Q Q' are carried on, but not with the shaft F, which forms merely an axle, upon which they turn freely, being actuated by independent mechanism.

They are driven from the cone of pulleys G on the driving-shaft C, connected by the belt b with the corresponding cone of pulleys H on the counter-shaft I, from which the pulley K and belt d communicate motion to the pulley L on the counter-shaft M.

These counter-shafts have their bearings on the frame-pieces J J, which are pivoted at one end to the standards e.

On the counter-shaft M are the friction-wheels N N, which are brought into frictional contact with the peripheries of the spiders or wheels Q Q' on one side of the machine.

All these wheels Q Q' being rigidly connected by rods W W passing through them, all motion communicated to part will be communicated to all.

The degree of this frictional contact is regulated, as illustrated, by a wedge, g, driven under one end of the frame J. For this it is obvious that any equivalent mode of regulation may be substituted, so that the speed of the wheels Q Q' is entirely within the control of the operator.

The wheels or spiders Q Q' carry the head spindles R, which turn freely in bearings in the wheels Q Q', and are rotated by belts passing around a pulley, S, on the spindle, and around a grooved pulley on the shaft F, and rotating with it, the number of the grooves or bearing surfaces, of course, corresponding with the number of head-spindles.

The tail-spindles are carried by the wheels or spiders Q Q'.

They are constructed with splines, indicated by the pins h and slots g, which prevent their revolving on their own axes, while permitting them to be moved longitudinally.

This movement is effected by means of the cam-guide V, secured to the head-plate between the wheels Q Q'. The form of this guide is shown in fig. 7, where it is represented reversed, in perspective.

A stirrup, X, is placed astride of each tail-spindle, and pivoted to one of the brace-rods, W.

It has a friction-roller, i, attached at the end, and operates the tail-spindle by means of a pin, j, passing through a slot in the stirrup into the spindle.

A spring-latch, with a beveled head, attached to the tail-spindle, passing inward through the inner wheel Q', is so arranged that as the tail-spindle is thrust toward the head-spindle, the spring, yielding, will permit the head to pass through the wheel Q', until, having passed it, it will be thrown out, and catching against the inner face of the wheel will lock the tail-spindle in position until the latch is detached.

This is effected by means of a plate, l, on the cam V, shaped as shown in fig. 7.

When the latch has been detached by the inclined edge of the plate l, the friction-wheel i on the stirrup X encountering the inclined surface of the cam V adjoining the plate l, the tail-spindle will be retracted,

and will so remain until the wheel *i*, striking the surface of the vertical portion of the cam *V*, as shown in fig. 7, it will be again projected to seize a stick to be turned.

This mechanism permits the stick to be operated upon to be, at the proper time, engaged between the tail and head-spindles, and dropped when it has been turned off.

The cutting mechanism is shown in detail in fig. 2.

But one cutter is shown, but it will be understood that the form and number of the knives must depend upon the work to be performed, and that each set of spindles is provided with its own cutting mechanism.

Z is the cutter, attached to an arm pivoted on one of the brace-rods *W*.

It is placed between a pair of steady rests, 2, firmly attached to said rod.

The form and number of the cutters must be determined by the length and form of the pieces required to be turned. If several are used they will be arranged side by side between the steady rests.

The cutters are so suspended on the rods *W* that their front ends will come under the piece held between the chucks, while the tail piece extending toward the central shaft forms a lever, 3, the end of which extends under the collar 7, turning with the shaft 4.

On the periphery of the collar 7 there is screwed an adjustable boss, 3, which forms a cam for pressing against the tail piece, and thereby forcing the cutters set in the throat of the cutter-head against the lower surface of the revolving piece to be turned, and gradually pressing the cutters forward until the piece is finished, when, the cam releasing the tail piece, the cutters will be withdrawn by the action of a spring, 8, resting on the collar.

The collar 7 is revolved in the following manner:

It is keyed to the shafts 4. These shafts have their bearings in the arms of the spiders or wheels *Q Q*, nearer the center than the rods *W*, and extend through both the wheels *Q*, each carrying upon its outer end a spur-pinion, 5, which meshes into a stationary spur-wheel, 6, shown in fig. 4, bolted to the frame.

As the spiders or wheels *Q Q* revolve, the pinions 5 and collars 7 will be caused to revolve at the same speed. The knives will thus be brought into action, one at each revolution. Their operation must be so

timed by the cam 3 that they will be brought to bear against the stick after it is seized by the chucks.

The wood is fed into the hopper, shown in figs. 1 and 3, and taken by the chucks from the hooks in the same manner as in my said former Letters Patent set forth.

The arrangement of the parts of the machine is such, that at the instant the chucks are passing the said hooks, the cam will throw forward the tail-spindle to confine the stick. The stirrup, acting as a lever, will firmly press the centers against the ends of the stick.

As soon as the stick is centered the knife should be brought into action, and turn down the stick while the spiders are completing about half a revolution, when, the latch being raised by the cam *L*, the cam *V* will retract the tail-spindle, and thus disengage the stick, which will fall below the machine.

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

1. In combination with the head and tail-spindles, the former of which revolve on their own axes, and also around a common axis, as described, cutters arranged to turn off the stick while revolving around the same common axis.

2. The cutters *Z*, suspended on rods *W* between the spiders, and constructed with tail-pieces, 3, and springs, 8, in combination with the cam which brings the cutters into action, substantially in the manner set forth.

3. In combination with the cutters and cam last aforesaid, the pinions 5, shafts 4, revolving with the spiders, and fixed spur-wheel 6, substantially as set forth.

4. In combination with the lathe-head *Q Q* and shaft *F*, independently revolving, the adjustable friction-wheels *N*, communicating motion to the lathe-heads, substantially in the manner set forth.

5. In combination with the tail-spindles and cam *V*, the stirrups *X*, arranged to operate the spindles, substantially in the manner set forth.

6. In combination with the tail-spindles, the spring-latches *Y*, and cam *V* for detaching said latches from the spider-rim, substantially in the manner set forth.

Witnesses:

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HARRY S. SPRAGUE.