J. BACHELDER.

LATHE.

No. 173,576. Patented Feb. 15, 1876.

Fig: 1.

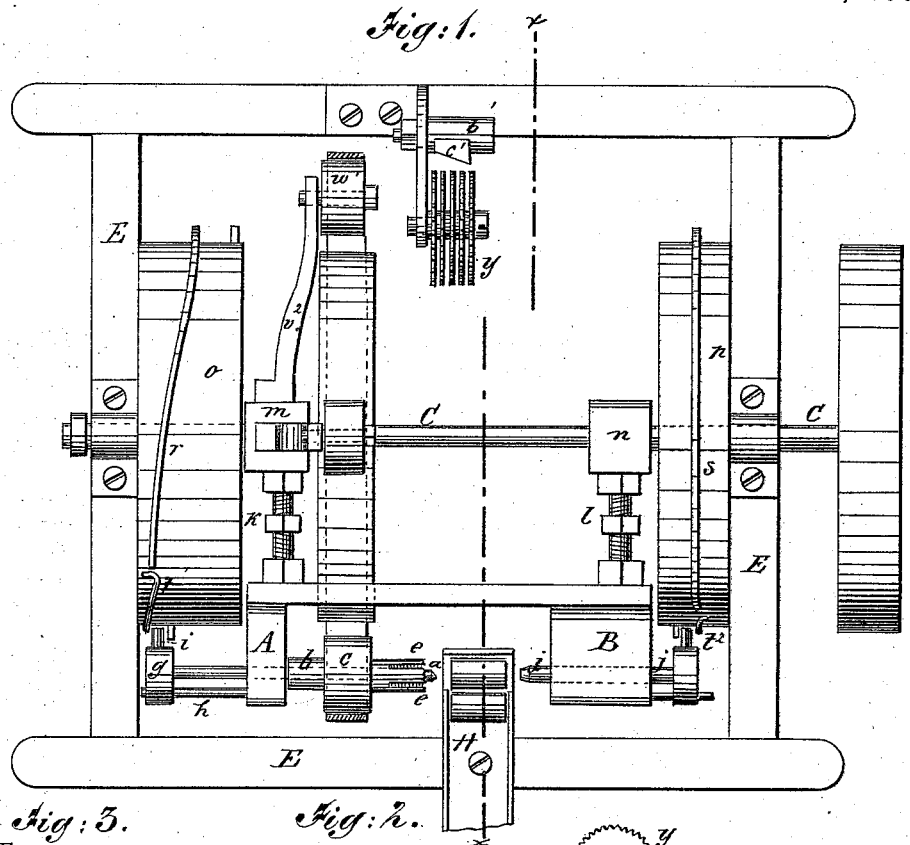


Fig: 3.

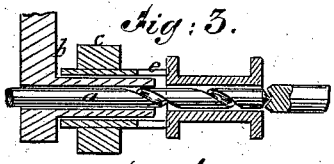


Fig: 2.

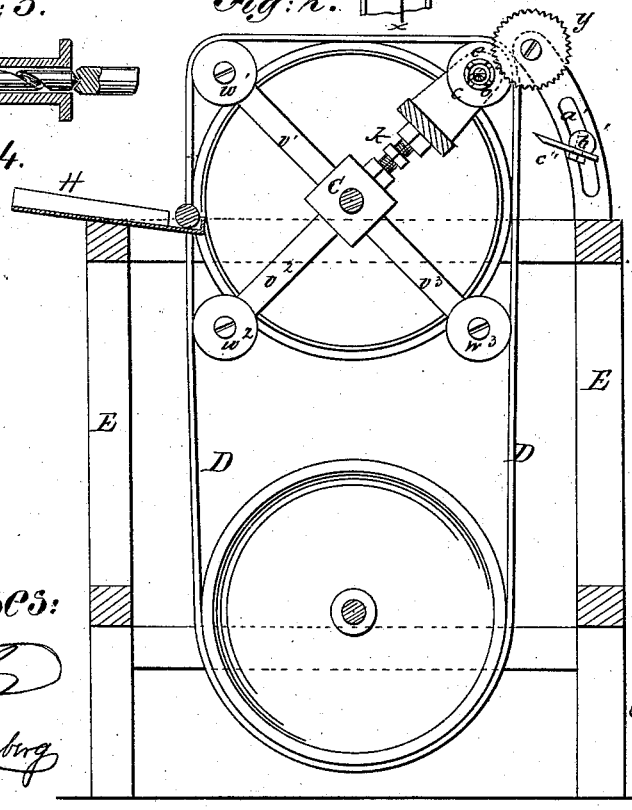


Fig: 4.

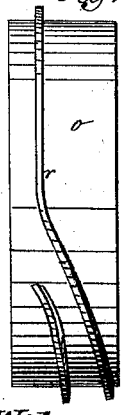
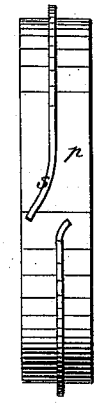


Fig: 5.



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Atty

UNITED STATES PATENT OFFICE.

JOHN BACHELDER, OF GARDINER, MAINE, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOEL JENKINS, OF NEW YORK, N. Y.

IMPROVEMENT IN LATHES.

Specification forming part of Letters Patent No. **173,576**, dated February 15, 1876; application filed September 22, 1875.

To all whom it may concern:

Be it known that I, JOHN BACHELDER, of Gardiner, in the County of Kennebec and State of Maine, have invented an Improvement in Lathes, and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention is in the nature of an improvement in turning bobbins, spools, &c.; and the invention consists in a bobbin-turning-machine constructed with revolving head and tail stocks, adjustable on their axis, and with reciprocating and automatically-adjusting perforator, dead-spindle, and pulley, substantially as hereinafter described.

In the accompanying sheet of drawings, Figure 1 is a plan or top view of my machine; Fig. 2, a cross-section of same in line *x x*, Fig. 1; Fig. 3, a detailed section showing perforator, and Figs. 4 and 5 are views showing cams for perforator and spindle.

Similar letters of reference indicate like parts in the several figures.

It is desirable to turn quickly and cheaply bobbins of all kinds and spools. By my improved machine, not only is the spool or bobbin turned to the right size and shape, but it is also perforated at the time of turning the bobbin. To accomplish this, head and tail stocks A and B are secured upon a central revolving axis, C, so that, as this shaft is caused to revolve by any suitable mechanism, the head and tail stocks will be carried or revolved with it. To the head-stock A, fitted into suitable bearings formed into said stock, is a peforator, *a*, onto which is fitted a sleeve, *b*, provided with a pulley-wheel, *c*. The part of the sleeve that projects beyond this pulley-wheel, on its front face, has formed on its edge a series of teeth or serrations, *e*.

The rear portion of the peforator *a*, which projects more or less beyond the rear face of the head-stock A, has affixed to it a disk, *g*, to the lower portion of which is secured a pin or screw, *i*, and through the upper portion of which projects a guide-pin, *h'*. Into the tail-stock B is also fitted a centering-spindle, *j*, the portion of which that projects beyond the rear surface of the stock is provided with a disk having a screw and a guide-pin, in precisely the same manner as is the disk on the peforator, *a*, the guide-pins in each instance being secured at one end to the head and tail stocks, respectively. The head and tail stocks before mentioned are secured to the axis or central shaft C, with which they revolve, by set-screws *k* and *l*. These screws enter into suitable holes tapped beneath the head and tail stocks, and also into bosses or collars *m* and *n*, fixed to the shaft C. Fixed to the frame-work E, of the machine are two disks or drums, *o* and *p*, with spiral ribs *r* and *s*, forming cams, and to the frame-work E are also secured springs, t^1, t^2, these springs bearing upon the surface of the disks or drums *o* and *p*. Through the center of these disks or drums passes the shaft C, and to one of the bosses or collars *m* are affixed radial arms v^1 v^2 v^3, and to the ends of these arms are affixed additional head and tail stocks.

To the frame E is also secured, by a suitable support, a gang of circular-saws, *y*. This support for the circular saws is formed to the arc of a circle, and into it is cut a curved slot, *a'*, into which is fixed by a set-screw the rest, *b'* for the finishing-knife, *c'*, so that this finishing-knife may be moved in the slot if desired.

Now, my machine being constructed substantially as I have described it above, its operation is as follows: The wood from which the bobbins are to be made is cut into suitable lengths and fed through a feeding-trough, H, to the machine. When the block arrives at the end of the trough it is caught on the points of the centering-spindle *j* and perforator *a*, which are held back by the cams *r* and *s* until, by motion of the shaft C, they are brought opposite the center of the block, when they simultaneously give way, and are instantly forced against the center of the block by the springs t^1 t^2. The block is held between spindle *j* and perforator *a* until the pin in the disk of spindle *j* comes in contact with the cam *s*, by which the block is forced onto the spurs on the ends of sleeve *b*, at the same time forcing the perforator *a* back against the spring t^1. The instant that the serrations

in the sleeve enter the wood the block is at once revolved by the action of a belt, D, passing around the pulley-wheel *c*, and, as the block is thus revolved, the head and tail stocks are revolved about the axis or shaft C, and as it is carried around this axis the pin *i* on the disk *g* on the end of the perforator *a* is brought in contact with the cam *r*, which gradually forces the perforator *a* through the center of the block, forming the necessary perforation in it to receive the spindle when the bobbin is to be used as such. And as the block continues to be carried around or revolved, it is brought in contact with the gang-saws *y*, which are set at any desired position or angle, and these saws, revolving rapidly in any desired way, at once reduce the block to any required size and form, roughing out the bobbin complete, and leaving nothing to be done but smoothing its surface, which is accomplished by a finishing-knife or knives, *c'*, against which the bobbin is brought, and which shaves off the roughened surface, leaving it smooth and the bobbin complete. The completed bobbin continuing to revolve, the cams *r* and *s*, acting respectively on the perforator and centering-spindle, drawing them apart, free the bobbin from the spindle and perforator and disengage it from the serrations in the sleeve, permitting it to drop completed into any desired receptacle, when the centering-spindle and perforator are brought in contact with another block at the end of the trough, and the operation just described is repeated, and so on, so long as it is desired to make the bobbins.

To adapt the machine to turning bobbins of any given size, the head and tail stocks A and B may be raised from or brought nearer to the central shaft C by simply screwing in and out the set-screws *k* and *l*, when, as is obvious, the head and tail stocks and the block between them will be brought nearer to or farther from the gang-saws, and thus enable the saws to reduce more or less the bobbin, making it larger or smaller. The finishing-knife *c'* is secured to the support of the gang-saws in a curved slot, *a'*, as before stated. By this arrangement, while the knife may be brought to bear on any portion of the bobbin, whether above or below its center, yet, since it is adjusted in an arc, this change of position will not change its nearness to the bobbin; in other words, it will at all times maintain its given distance from the bobbin at whatever angle it may be set. It is obvious that several knives may be used in the slot *a'* or support. The pulley-wheels w^1 w^2 w^3, shown in the drawings, are dispensed with when the radial arms v^1 v^2 v^3 are used to support additional head and tail stocks.

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

1. In a machine for turning bobbins, spools, &c., the revolving head and tail stocks, in combination with devices *a j* for holding or centering the bobbin, &c., independently-operated bobbin-revolving devices *b c e*, and an automatically-actuated perforator, *a*, arranged substantially as described.

2. In a machine for turning bobbins, spools, &c., head and tail stocks provided with devices *k l*, whereby their relative distance to the central axis around which they revolve may be increased or diminished, as and for the purpose described.

3. In a machine for turning bobbins, spools, &c., the rotating head and tail stocks, and independently-rotating bobbin-holder *a j*, in combination with the automatically-operating perforator *a*, constructed and arranged substantially as described.

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Witnesses:
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JAMES D. WHITE.