N. Chapin,

Gage Lathe.

No. 9,529. Patented Jan. 11, 1853.

Fig. 1

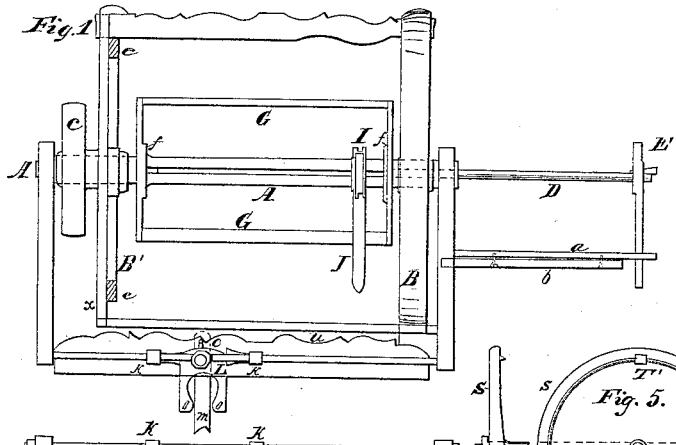


Fig. 2

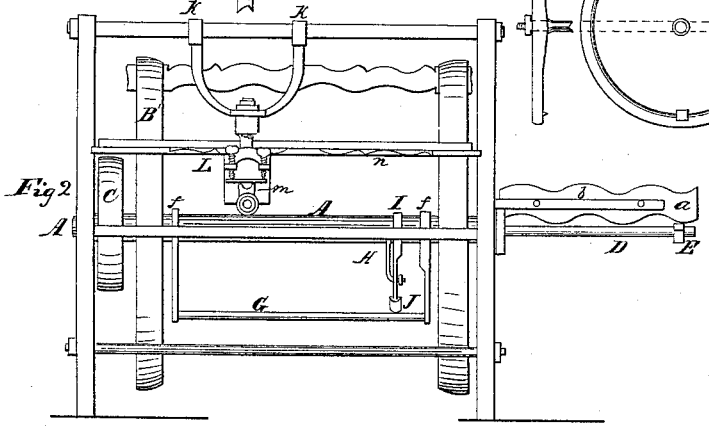


Fig. 5.

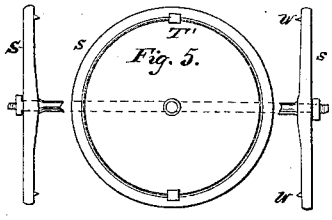


Fig. 3.

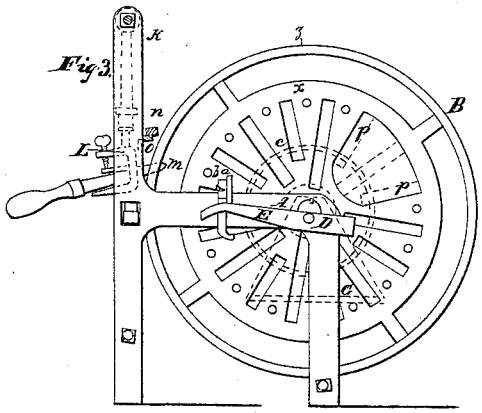
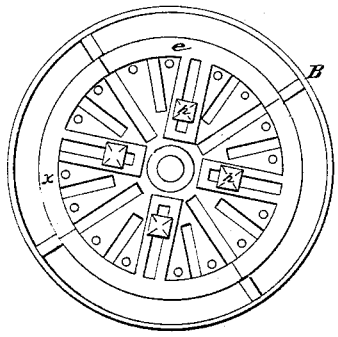


Fig. 4.



UNITED STATES PATENT OFFICE.

NATHAN CHAPIN, OF NEW YORK, N. Y.

LATHE FOR TURNING INTERIOR AND EXTERIOR SURFACES.

Specification of Letters Patent No. 9,529, dated January 11, 1853.

To all whom it may concern:

Be it known that I, NATHAN CHAPIN, of the city, county, and State of New York, have invented a new and useful Improvement in Machines for Duplicate Turning of Profile Work, &c.; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, of which—

Figure 1 is a plan or view as seen from above; Fig. 2, a front elevation; Fig. 3, an end elevation; Fig. 4, an inside view of the heads to exhibit the clamp; Fig. 5, a modification of the invention as applied only to profile on one side.

The nature of my machine consists in constructing a machine in which profile work may be executed upon both or one edge of pieces of wood or other material by securing any desired number in a pair of disks (say, of 6 or 8 ft. diameter) thus forming a drum or cylinder turning on an axis: which being driven by proper machinery, said pieces may be worked to conform to a pattern on the outside face or edge by an improved swing rest for the gouge working against the edge of said pattern, while the inside face or edge is at the same time worked by a swing rest carrying a gouge, which is made to advance and recede agreeably to the edge of the pattern upon the outside of the cylinder, by means of a rod passing along a groove in the axis communicating motion to the cutter and rest. By this means beautiful work in profile suitable for window blinds, balusters, fancy bracket or any work heretofore done with the small saw, may be executed, and as immense numbers of pieces may be formed at one operation and exactly alike, the cost of production may be reduced to a mere trifle. By a provision made in the heads or disks, consisting of slots and holes for pins, articles such as bedstead heads, table tops or other broad pieces may be secured and worked in profile, either with a square edge or at an angle if desired.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation, referring to the drawings of which—

A is the shaft secured from turning by wedges confining it to the framing; B B′ large disks for retaining the material to be worked in profile; *c* a band wheel or pulley confined to B′ and turning with it and the opposite disk B freely on the shaft A; D, an iron rod that passes along a groove in the under side of the shaft A, for operating the gouge J; E a handle on the outer end of rod D, and is moved against the edge of any desired pattern; H the inner end of the rod, bent at right angles to the straight portion of D being united to, and operating slightly by lateral motion the frame I, to which the inner gouge J is attached; *a*, is the pattern for the inner profile, which may be varied, in this instance a wave line is adopted; *b* a bar projecting from the frame to which *a* is secured; *f f* stirrups by which the platform G G is suspended from the shaft A; upon one of the bars thereof the gouge J has a bearing; *n* the pattern for the outside profile; K K stirrups by which the gouge *m* is suspended; L the upper plate of stirrup having set screws pressing a plate under which the gouge is confined; *o*, a bent stub projecting from the back of L, for passing along the edge of pattern *n*.

In Fig. 4, *e* represents one of the clamps by which the pieces to be worked are retained in the disks, using for that purpose, screws and nuts *h*, *h*, thus connecting the *x* portion of B to *e*; *p p*, is a man hole in one of the heads.

A modification of the machine is shown in the bracketed Fig. 5, where *s s* are disks provided with a sleeve and turning on a shaft, being provided with clamp nuts by which they may be forced toward each other, and made to retain the pieces to be profiled, by a V projection marked W. T is a portion of the projection removed for facilitating the entering of the pieces, which may be moved on the projection around the cylinder, and when it is completed a piece or wedge may be introduced, permitting the ends thereof to pass through T to the outside of the disks.

In Fig. 1, the method of placing the material to be profiled is as follows: Introduce between *x* and *z* see Fig. 3 any number of pieces with their edges out, extending across from disk to disk, when the spaces are filled, slide outward *e*, firmly against them and clamp *e* and *x* together with bolts *h*, and thus form a cylinder perfectly clamped. It is driven by the pulley C united with one of the heads by a sleeve, and turned freely on the shaft or axis A. Now apply the outer gouge *m*, on the stirrup K, keeping the stub *o* of said stirrup moving

over the edge of the pattern *n* by which it is made to advance or recede conformable to said pattern. The gouge J, on the inside of the cylinder is operated by the handle E, connected with the rolling rod D and bent end thereof H (said rod sliding in a groove in axis A) acts on the bar I, thus causing the gouge J to move back and forward in the arc of a circle by the handle passing over said pattern.

The platform G G is for permitting the operative to finish by hand the sharp edges of work in a pattern such as represented on the outside, the entrance being by the man hole *p p*, it also affords opportunity of securing the pieces by the clamps *e* in the heads by locking them between the periphery and said clamps.

The advantages of this machine, are great accuracy, as all the pieces must necessarily be alike, and obviates the necessity of removing them until finished, not only on the outside, but also on the inside edges, or profiles, while the sliding clamps admit securing the pieces, irrespective of accurate lengths, and permit the forming of tenons and plinths on the ends, which is important in forming baluster stuff. The open slots give great facility of entering endwise the material to be turned.

In the modification of the invention (see Fig. 5) its simplicity may be adduced, but requires accuracy of length and the cutting of a notch, for the projection *w*, on the heads *s* to enter; it also admits working the stuff the full length and forming tenons. In practically using the modification I find it best to cut the material of exact lengths, then gage them for a center on their ends, if the stuff is thick enough to form the face of the article desired, but if the material is thin they may be clamped together and gaged; they are then passed with the ends over a circular saw and a groove cut across their width, for the projection on the disk or head to enter, the latter pieces being entered at the removed portion T and slip around, the last piece occupying T and passing through the heads. By this means a difficulty experienced in my first experiments of setting up the pieces was obviated in the modification; to turn the inner edges, requires the reversing the material.

By the method of swinging the gouges in Figs. 2, 3 and 1 the liability of a gouge (otherwise retained) of being drawn under and of course the work spoiled, is prevented, it being absolutely requisite to set the gouge with a sharp angle to the cylinder, any attempt at too rank a cut is obviated by its swinging out against the hand of the workman, by the stub *o*, on the stirrup working against the edge of the platform any desired number of accurate copies may be produced, without requiring other than ordinary skill of the workman, and dispensing with calipers entirely.

Having described the devices by which turning of profile work is effected, what I claim as my invention and desire to secure by Letters Patent is,

1. Constructing the clamping heads *s s* Fig. 5, with a V projection *w*, on the interior face, in combination with the orifices T, cut through said clamps and V projection for the purpose of introducing key slats in order to retain the pieces firmly in position during the operation of turning the interior and exterior surfaces.

2. I claim giving to the sliding and vibrating interior cutter J, suspended on the stationary mandrel motion corresponding to the pattern to be turned, by a rod D, passing through the stationary mandrel A, in the manner and for the purpose herein described.

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

NATHAN CHAPIN.

Witnesses:
ABIJAH HULBERT,
JOHN L. SMITH.