2 Sheets—Sheet 1.

A. WARTH.

ENGINE LATHE FOR TURNING WOOD AFTER EACH GIVEN PATTERN, MODEL, &c.

No. 11.798. Patented Oct. 10. 1854.

Fig. 1.

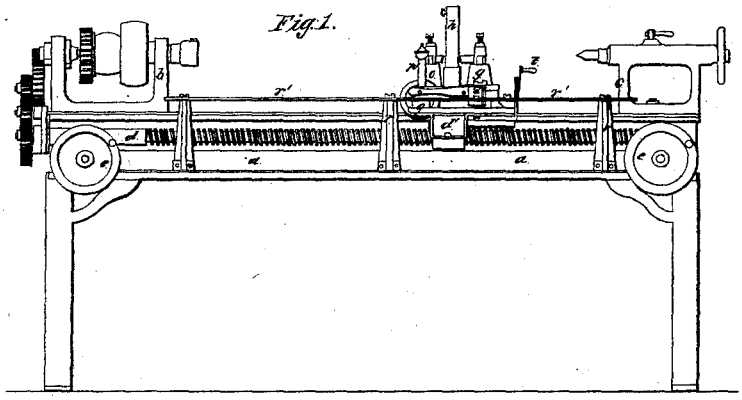


Fig. 2.

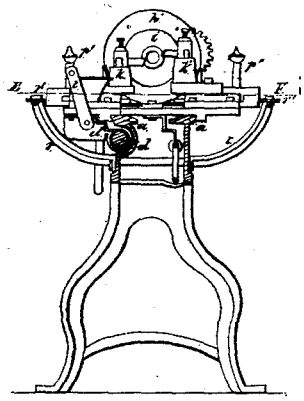


Fig. 4.

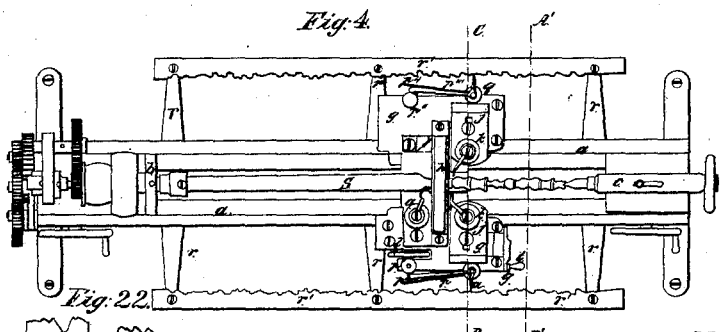


Fig. 22.

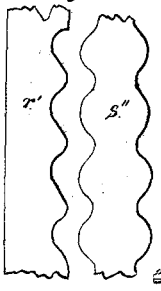


Fig. 8

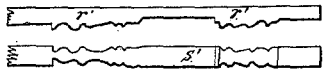


Fig. 5.

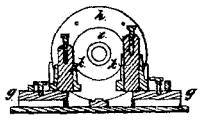


Fig. 6.

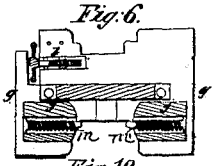


Fig. 10.

Fig. 9.

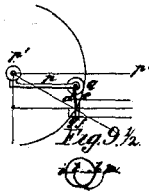
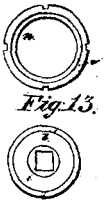


Fig. 9½.

Fig. 13.



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No. 11.798. Patented Oct. 10. 1854.

Fig: 3.

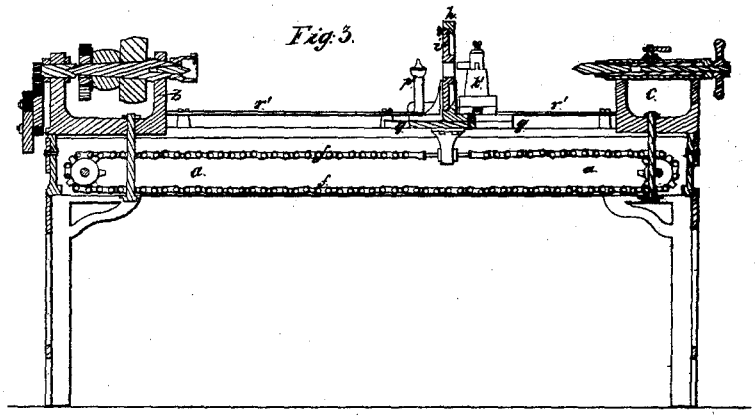

Fig: 7.

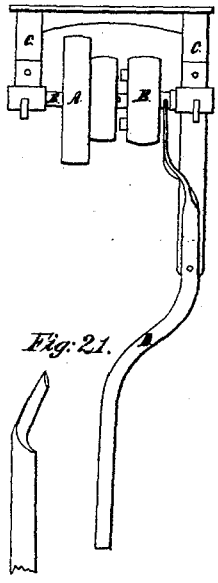

Fig: 16.

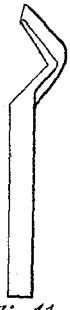

Fig: 17.

Fig: 18.

Fig: 11.

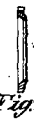

Fig: 12.

Fig: 19.

Fig: 20.

Fig: 21.

Fig: 14.

Fig: 15.

UNITED STATES PATENT OFFICE.

ALBIN WARTH, OF NEW YORK, N. Y.

TURNING-LATHE.

Specification of Letters Patent No. 11,798, dated October 10, 1854.

To all whom it may concern:

Be it known that I, ALBIN WARTH, of the city, county, and State of New York, have invented a new and useful Improvement in Lathes for Turning Wood and other Materials; and I do hereby declare that the following is a full and exact description thereof.

The nature of my improvement consists in providing a slide rest having a number of suitable cutting tools attached, which are made to operate on the material to be turned and produce a given result by means of intermediate levers which follow the configurations of fixed metallic guides.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation, reference being had to the annexed drawings forming a part of this specification, in which—

Figure 1, is a side elevation of my improved lathe; Fig. 2, cross section through the line A′, B′; Fig. 3, longitudinal section; Fig. 4, plan; Fig. 5, cross section through the slide rest; Fig. 6, portion of a longitudinal section of the slide rest; Fig. 7, hang pillow block; Fig. 8, sample of guide, and turned wood; Figs. 9, 9½, diagrams explanatory of the construction of guide; Figs. 10, 11, 12, face plates; Figs. 13, 14, 15, rings; Figs. 16, 17, 18, 19, 20, 21, cutting tools; Fig. 22, full sized plan of guide and turned wood.

Similar letters refer to like parts.

A, band pulleys; B, sliding clutch; C, hanger; D, starting lever; E, band pulley shaft; *a*, frame of the lathe; *b*, headstock; *c*, back puppet; *d*, feed screw; *d′*, clamp; *e*, chain wheel; *f*, slide rest chain; *g*, slide rest; *h*, ring mandrel; *i i′*, inner ring plates; *j j′*, slides; *k k′*, finishing tools; *l*, the adjusting screw; *m m′*, springs; *n*, face plates; *o*, hooked tool; *p*, guide lever; *p′ p″*, guide lever fulcrums; *p‴*, guide lever, p^4 spring on the guide levers; *q*, following points, or followers; *r*, guide supports; *r′*, metallic guides; *s*, unfinished turning; *t*, spring stop lever.

Previous to putting in the timber of wood or other material to be turned, the slide rest (*g*) is brought up to one end of the machine so that the center screw of the back puppet *c* can pass through the opening in the ring *i*. The wood is then placed between the headstock mandrel and back puppet screw in the usual manner. The hooked tool is then adjusted so as to cut away the stick *s* to such a size as will permit the stick to pass through the opening in the ring plate *i*.

The feed screw *d* is operated by the cogged gearing at one end of the machine, in the usual manner. The clamp *d′* and the spring stop lever *t*, by which the clamp is operated, are both attached to the slide rest. By throwing the spring lever *t* outward the clamp *d′* clutches the screw *d*, and the slide rest with its various appurtenances advances. By throwing the spring lever *t* inward the clamp *d′* is released from the feeding screw *d*, and the slide rest stops.

Motion having been given to the mandrel of the headstock *b*, the tool *o* cuts down the stick *s*, and permits it to pass through the ring plate *i*, which plate now serves as a mandrel, so that mandrel *c* is no longer of any use. As the slide rest moves up, and the stick comes through the ring plate *i*, the stick is operated upon by the finishing tools *k k′*.

Each side of the slide rest (*g*) is grooved into which slides *j j′* fit. The tool *k* is attached to slide *j*, the tool *k′* to the slide *j′*. The under sides of *j j′* are hollowed, into which the springs *m m′* are fitted. These springs serve to draw back the slides *j j′* and with them the tools *k k′*, when the slides are pushed forward so as to make the tools *k k′* operate on the wood *s*.

The guides *r′* are arranged at the sides of the lathe, being supported by supports *r*.

The guide levers *p p‴* have their fulcrums at *p′* and *p″* respectively. To the guide lever *p* is attached a spring p^4 which bears against the pin *v*. This pin passes through the bearing *p′* and touches the center pivot which is notched. The guide lever *p* may thus be slipped up so that the follower points *q q* will not touch the guide plates *r r*, for when the guide lever is raised the spring p^4 pushes the pin *v*, which catches in a notch in the pivot, and thus sustains the lever *p*. The lever *p‴* is similarly furnished. Both *p* and *p‴* are furnished at their ends with follower points *q*, and also with friction rollers. The followers or points (*q*) follow the configurations of the guide plates *r′*. The springs *m m′* continually press the slides *j j′* against the friction rollers at *q*, consequently the slides *j j′* have a motion inward or outward, transverse to the stick, *s*, in correspondence with the

movement of the followers q, which are themselves governed by the configuration of the guide plates r.

It will of course, be understood that the guide levers, p, p''', are attached to the slide rest g. The guide plates r' extend the entire length of the machine. As the slide rest g moves along, the levers p, p''', are also drawn, while the followers q are made to follow the configurations of the guide plates r', and impart the required transverse motion to slides j j'. In this manner the tools k are made to produce in the wood, such forms as may be desired. It is obvious that when a change is required in the design of the turnings, different guide plates must be put on. In this manner I am enabled to produce almost any desired variety of ornamental or plane turning though I cannot produce irregular surfaces.

The guide plates r' are composed of thin bars of metal, the inner edge of each being cut out with reference to the production in the wood of the particular design required.

It might at first be supposed that the guide plates r' were merely sections, in reverse, of the designs produced in the wood, but such is not the case. A glance at Figs. 8 and 22, where, s is a section of turned wood and r' the corresponding guide plate, will show the difference. If the movements of q were always in a line transverse to the longitudinal center of the stick, s, as exhibited by the line C, D, Fig. 4, then the configurations, of the guide plates r' would only be reverse sections of the forms produced in the wood; diagrams in Figs. 9 and 9½ will assist in explaining the manner of constructing given guide plates, p. In Fig. 9, 9½, represents one of the guide levers, with fulcrum p' and guide follower q. Suppose a ball is to be turned whose diameter is equal to i, l. In order to construct the equivalent guide plate, the distance from d to e is measured, and the intersection of the guide plate is made to commence at k instead of i, k being just as much nearer the center of the circle as the distance from d to e. This difference in the intersection of the guide plate is occasioned by the fact that the lever p has a fulcrum at p' consequently the follower q cannot move transversely to the center of the line p^5 (which is parallel to the longitudinal center of the stick s Fig. 4,) but describes a circle. The other intersection of the guide plate is ascertained by measuring the distance from f to g, and the intersection of the guide plate is equally extended beyond the diameter of the ball to be turned, which brings the point of intersection at m instead of l. The zenith of the curve in the guide remains the same as the zenith of the ball to be turned. The three points e, g, and f, being given the right curve of the guide plates is easily indicated.

Having done with the diagrams 9, 9½, we now return to the other figures of the drawings. In consequence of the levers p p''' having fulcrums at p' and p'' respectively, the tools k k' are free from all jarring or vibration. Therefore the finest and most delicate work may be produced by my lathe, with the utmost facility. The work also comes from the lathe in a finished condition. This cannot be done without the use of the guide levers p, p'''. It would not answer to attach the followers q directly to their respective slides j j' and so do away with the levers p p''', for good work cannot thus be executed.

The cutting tools shown in Figs. 16, 17, 18, 19, and 20 are entirely new and of peculiar construction, and I consider them of importance to my improvement, since no other cutting instruments could be successfully used with this lathe. Their cutting edges are formed with particular reference to the lateral motion of the slides j j and the longitudinal motion of the slide rest g.

The ring plate i' is attached to a face plate n, which latter fastens on the back side h, by means of screws. When it is desired to leave any portion of the turned stick square, (as in the sample Fig. 8) the ring plate i is removed and the face plate n and ring plate i' with its square opening substituted. In using the ring plate i' the stick to be turned must, of course, be previously hewn out to the size and shape of the square hole i'. Ring plates of any regular sided form may be used when desired.

Having thus described my invention I claim—

The guide levers p p''' or their equivalents, in combination with the spring slides j j' or their equivalents, and the guide plates r' or their equivalents, arranged and combined substantially as described.

ALBIN WARTH.

Witnesses:
A. BRUEN,
CHARLES LEUTHIN.