(No Model.) 2 Sheets—Sheet 1.

S. J. DE LUE.

LATHE FOR TURNING LASTS AND OTHER ARTICLES.

No. 339,274. Patented Apr. 6, 1886.

Fig. 1.

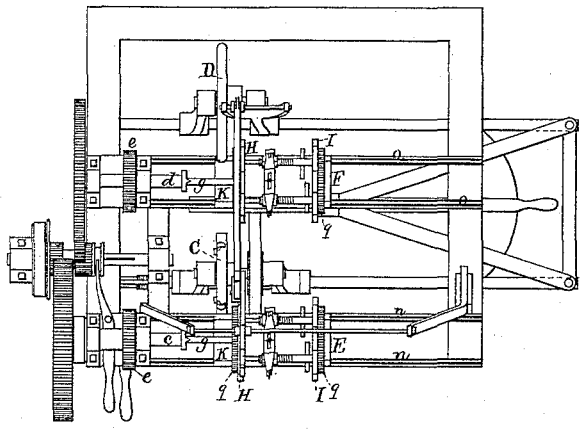


Fig. 2.

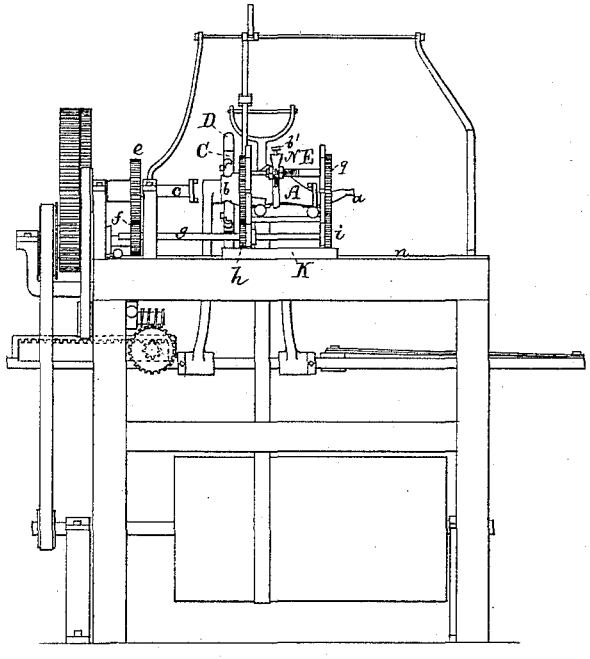
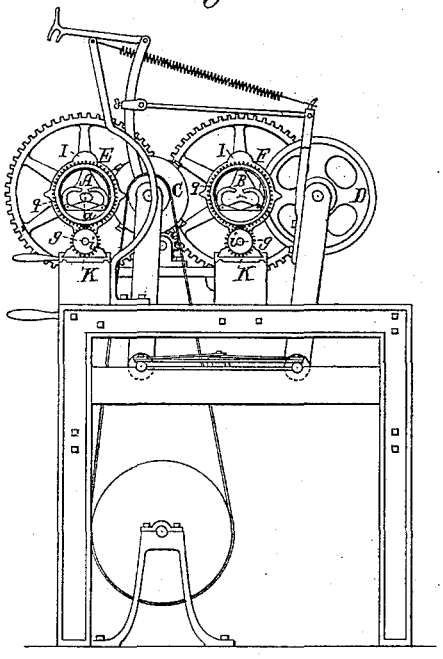


Fig. 3.



Witnesses.
S. N. Piper
R. B. Torrey

Inventor.
Samuel J. DeLue,
by R. K. Eddy atty.

(No Model.) 2 Sheets—Sheet 2.

S. J. DE LUE.

LATHE FOR TURNING LASTS AND OTHER ARTICLES.

No. 339,274. Patented Apr. 6, 1886.

Fig. 4.

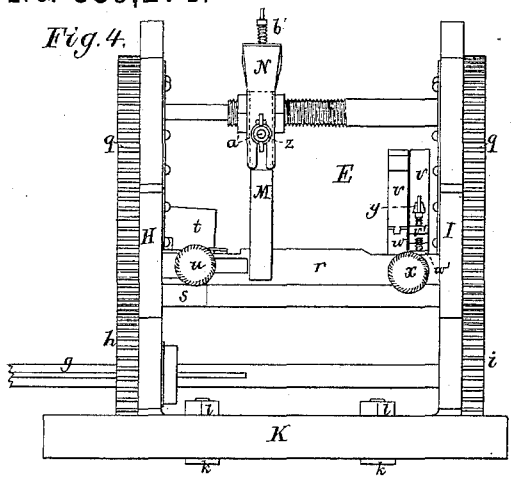


Fig. 6.

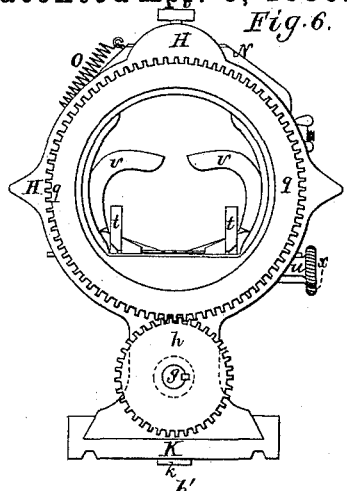


Fig. 5.

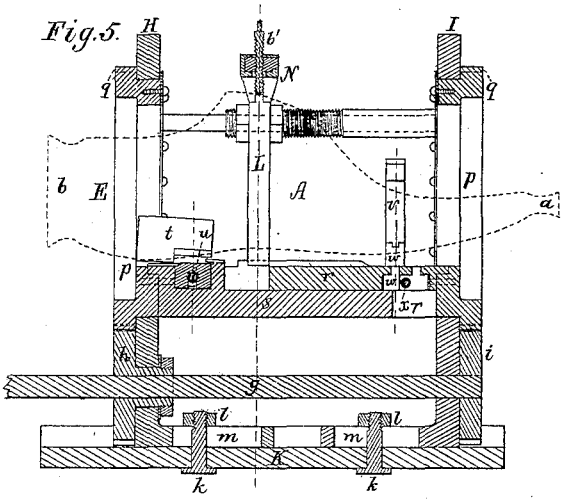


Fig. 7.

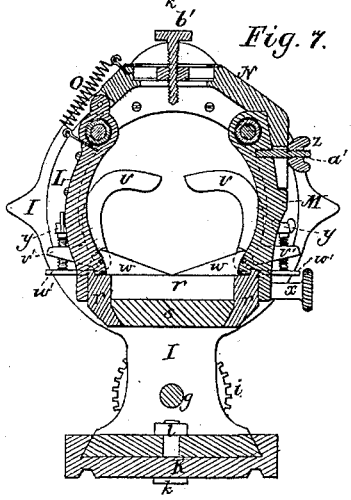


Fig. 8.

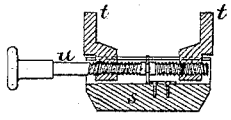


Fig. 9.

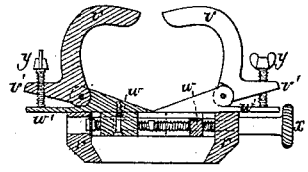
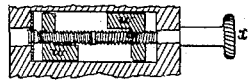


Fig. 10.



Witnesses.
S. N. Piper
R. B. Torrey

Inventor.
Samuel J. De Lue.
by R. K. Lee, Atty.

UNITED STATES PATENT OFFICE.

SAMUEL JACOB DE LUE, OF NATICK, MASS., ASSIGNOR, BY MESNE ASSIGNMENTS, TO HIMSELF AND JOSEPH RICH ATWOOD, OF SAME PLACE.

LATHE FOR TURNING LASTS AND OTHER ARTICLES.

SPECIFICATION forming part of Letters Patent No. 339,274, dated April 6, 1886.

Application filed December 29, 1885. Serial No. 186,974. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL JACOB DE LUE, of Natick, in the county of Middlesex, of the Commonwealth of Massachusetts, have invented a new and useful Improvement in Lathes for Turning Lasts or Various other Articles Irregular in Form; and I do hereby declare the same to be described in the following specification, and represented in the accompanying drawings, in which—

Figure 1 is a top view, Fig. 2 a side elevation, and Fig. 3 an end view, of a "Frohock last-turning machine" provided with my invention, the nature of which is defined in the claims hereinafter presented. Fig. 4 is a front elevation, Fig. 5 a median longitudinal section, Fig. 6 an end view, and Fig. 7 a transverse section, of the mechanism for supporting and revolving a last while the end or heel and toe portions thereof are being turned automatically in the lathe. Fig. 8 is a transverse section of the rear clamps and their operative devices used for clamping the last at the sides of its heel. Fig. 9 is a view showing the front clamps and their operative mechanism, such front clamps being for grasping the last just in advance of its instep. Fig. 10 is a horizontal section of the mechanism for operating the said front clamps.

In the well-known "Blanchard" and "Frohock" last-turning machines as ordinarily constructed and used, a shoe-last can be turned, except at its toe and heel portions, of the blank projecting therefrom, which subsequently have been removed by a workman with suitable tools in hand, in order to properly form or finish the heel and toe of the last.

It is the purpose of my present invention to effect, automatically, the removal of such portions and the reduction of the last to proper form, both at its toe and heel, all of which can be accomplished by the mechanism hereinafter described, constituting my invention or a part thereof.

The Frohock machine or lathe shown in the drawings has, instead of the ordinary devices for supporting and revolving the pattern and blank, others of a different description, which sustain and operate such pattern and a partially-turned blank, and revolve them in order for the rotary cutter-wheel to effect the turning of the heel and toe portions of such blank.

In Fig. 2 this blank is shown at A in full lines, and in Fig. 5 by dotted lines, the parts of it projecting beyond the heel and toe and to be removed by the cutter-wheel being represented at *a* and *b*.

In Fig. 3 the pattern is exhibited at B as supported by mechanism like that employed for sustaining and revolving the partially-turned blank.

In Figs. 1, 2, and 3 the cutter-wheel of the lathe is shown at C, and the pattern-wheel at D, they being supported and provided with mechanism for operating them, such as is common to the Frohock lathe. The last and pattern holding and revolving mechanisms are likewise represented in the said figures at E and F, such being substantially as shown in the remaining figures and now to be described.

In Figs. 1 and 2 the ordinary revoluble arbors of the blank and pattern are shown at *c* and *d*, they being provided with the usual mechanism for synchronously revolving them. On each of these arbors there is fixed a spur-gear, *e*, that engages with a pinion, *f*, below it, and fixed on a shaft, *g*. The said shaft has on it two gears, *h* and *i*, (see also Figs. 4, 5, 6, and 7,) the first of which is splined to the shaft and pivoted to one of two uprights, H and I, extending upward from a base-plate, K, into which they at their feet are dovetailed, in order that they may be movable within it lengthwise of it. The gear *i* is fastened upon the shaft *g*. The upright H is movable toward or from the upright I, in order to properly adjust the heel-clamps, to be described, to the last to be turned at its heel and toe, a set-screw, *k*, going through a slot, *m*, in the base of the standard, and provided with a nut, *l*, serving to clamp the upright to the base-plate. One base-plate rests upon the ways *n*, for supporting the tail-stock of the last, the other base-plate resting on the ways *o*, for sustaining the pattern tail-stock.

Each standard has a circular opening, within which is pivoted an annulus, *p*, that extends beyond the standard and has upon the part so projecting gear-teeth *q*. The gear-teeth of the two annuli engage with the gears

h and *i*, which, when in revolution, cause the said annuli to simultaneously revolve. From these annuli there extend inward two flat projections or shelves, *r* and *s*, that marked *r* being directly over, within, and upon the other. Two jaws or clamps, *t t*, are supported on the shelf *s*, so as to be movable rectilinearly toward and from one another, they being provided with an adjusting-screw, *u*, pivoted to the shelf and screw-threaded, so as to cause them, when it is revolved one way, to approach each other, and to depart from one another on its being turned the opposite way. These jaws or clamps are to grasp the last on the flanks of its heel portion.

Two other clamps for grasping the last directly in front of its instep are shown at *v v*, they being formed as represented, and fulcrumed to two slides, *w w*, arranged and to slide rectilinearly upon the shelf *r*. An adjusting-screw *x*, pivoted in the shelf and screwed through the slides, serves, when turned one way, to cause them to approach each other, and when it is revolved in the other way to cause them to depart from each other. The said clamps *v v* have screwed down through their tails *v'* other adjusting-screws, *y*, which rest at their feet on projections *w'* from the slides *w*. The adjusting-screws *y* serve to tip the clamps upon the last, the screw *x* answering to adjust said clamps up to the last.

Between the two standards H and I are two curved posts, L and M, that project upward, as represented, from the shelf *r*. A curved or arched arm, N, hinged to the upper part of the post L, extends over and laps upon the other post, and is held in engagement therewith by a nut, Z, (see Fig. 7,) that screws upon a screw, *a'*, extending from the post M through the arm N, which at its free end is furcated to enable it to receive the screw and to be raised off it. A screw, *b'*, screwed down through the crown or middle of the arm N, and against the crown of the last, serves to aid in holding the last in place when it is in the clamps. A spiral spring, O, fixed to the post L and arm N, is to automatically raise the arm on the nut *z* being turned back on its screw.

When a pattern-last F is secured in the clamps for holding it, and a partially-turned last, as shown by dotted lines at A in Fig. 5, is secured within the clamps or devices, as described, for holding it, and the arbors *c* and *d* are put in revolution, both pattern and partially-turned last will be revolved, and by means of the pattern and cutter-wheels and their operative mechanism such partially-turned last may be farther turned down at its heel and toe, to there correspond in shape to those of the heel and toe portions of the pattern-last.

I claim—

1. The combination, with a last-turning lathe-frame and the pattern and cutter-wheels thereof, provided with the usual mechanism for operating them, relatively to the pattern and to a blank to be turned, of mechanisms, substantially as described, applied to the ways of such frame, as set forth, and being to support and revolve a pattern-last and a partially-turned last, in order to enable the latter to be automatically turned at its heel and toe by the cutter-wheel, each of such mechanism consisting of the bed-plate K, the open standards H I, and the revoluble annuli *p* and their clamps, as described, such annuli and clamps being provided with mechanism for operating them, essentially as set forth, and the said annuli being not only extended and pivoted within the said standards, so as to be revoluble therein, but provided with clamps *t t* and *v v*, as described, one set thereof being to grasp the last or pattern on the flanks of its heel portion and the other in front of its instep, all being as specified.

2. The mechanism, substantially as described, for supporting and revolving either a pattern-last or a partially-turned last, as explained, such mechanism consisting of the bed-plate K, the open standard H I, and the revoluble annuli *p* and their clamps, as described, such annuli and clamps being provided with mechanism for operating them, as set forth, and the said annuli being not only extended and pivoted within the said standards, so as to be revoluble therein, but provided with clamps *t t* and *v v*, as described, one set thereof being to grasp the last or pattern on the flanks of its heel portion and the other in front of its instep, all being as specified.

3. The combination of the posts L and M, (projecting from the shelf *r*,) and the arched arm N, hinged to one of the said posts and provided with the screw *b'*, as set forth, with the bed-plate K, the open standards H I, and the revoluble annuli *p* and their clamps, as described, such annuli and clamps being provided with mechanism for operating them, as set forth, and the post M having the screw *a'* and nut *z*, for holding to it the said arm N, as specified.

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Witnesses:
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R. B. TORREY.